ROCKS and MINERALS

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CHIPS FROM THE QUARRY

Grieger's Encyclopedia and Super-Catalog of the Lapidary and Jewelry Arts

This is the largest, most complete, and most attractive catalog ever put out for the amateur lapidary and jewelry trade. It is a De Luxe Edition of 162 pages and with so many very fine illustrations it is actually a pictorial catalog and price list. The type is large and easily readable. Practically every item offered for sale has its own illustration so that one can see what he is buying.

The catalog starts off with Behr-Manning Durite sanding cloth and paper; Norton's grinding wheels have their place, Hillquist lapidary equipment and saws cover a number of pages and so on down the list. Covington diamond saws, Vreco machines, B & I Gem Makers are all featured with many fine illustrations. As for minerals, crystals and especially gem material, including cut stones, they are featured in large numbers and with their corresponding illustrations. Jewelry findings, brooches, pendants, rings, in fact jewelry tools and supplies of all kinds are prominently featured and well illustrated. Books and magazines are also included.

The many hints and short articles on the cutting, polishing and mounting of gems including "Precision centrifugal castings" by William T. Baxter, and another fine article "Gem Reflections" by J. Harry Howard all contrive to make this fine catalog a textbook on the fascinating hobby of gem cutting.

This very attractive catalog with its pleasing green cover came out early in October, 1948. It is 9 x 12 inches in size, costs $2.00 a copy (but worth more), and is for sale by GRIEGER'S 1633 E. Walnut St., Pasadena 4, Calif.

Ten Day Collecting Trip!

Mr. and Mrs. Howard Hamilton, of Vandergrift, Pa., with the Editor of *Rocks and Minerals,* spent the first 10 days of October touring Pennsylvania, West Virginia, New Jersey, New York and some of the New England states. A highlight of the trip was a visit to the Carnegie Museum, in Pittsburgh, where Mr. David Seaman took the group behind the "scenes" in order that some recently acquired minerals, and others, might be examined.

Mr. Charles A. Thomas, of Royersford, Penn., was visited and his most interesting collection of fluorescent minerals was seen and examined.

Mr. Chester R. Snyder, of Norristown, Penn., spent almost one-half day showing his very fine collection of gem stones to the visitors. Mr. Snyder, a jeweler, has some unusually fine specimens which are housed in his apartment.

A large amount of interesting minerals were collected during the trip.

New Curator for Chicago Museum

The appointment of Dr. Robert Howland Denison to the staff of the department of geology at Chicago Natural History Museum as curator of fossil fishes, was announced Sept. 1, 1948, by Col. Clifford C. Gregg, director. Dr. Denison did his undergraduate work at Harvard University and received his Ph.D. from Columbia University. He was assistant curator at Dartmouth College Museum from 1937 until his appointment here. Immediately before joining the museum staff, he spent a year (1947-48) as a member of the University of California African Expedition.

Henry L. Luoma Passes Away

It is with much sorrow that we announce the death of Henry L. Luoma, of Ahmeek, Mich., who passed away on Sept. 20, 1948, after more than a year of extreme suffering. Mr. Luoma was the proprietor of the Keweenaw Agate Shop and through his steady advertising had made many friends throughout the country. He was a member of the R&MA since June, 1945, and the sympathy of the Association is extended to his widow and young daughter, Pat.

Mrs. Luoma will continue to operate the Keweenaw Agate Shop and we hope that our many members will watch for her advertisements and send in some nice orders for items wanted.

Peter Zodac

Two Errors

In the last issue of *Rocks and Minerals* an unfortunate error occurred on page 804 in Figure 3. The drawing was printed upside down so that the letters "A" and "C" refer to the wrong parts of the figure. If the figures "A" and "C" are reversed, the drawing would then be correct.

On page 804, 1st column, 3rd paragraph, a typographical error appears. Mention is made of emersing specimens in hydrochloric acid; the specimens should be emersed in sulphuric acid.

We are very sorry that these errors appeared in Mr. Hill's most interesting article.

—Editor

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VESUVIANITE

By DR. LLOYD W. FISHER
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Introduction

An excellent clear out crystal of Vesuvianite, whether it occurs as a single isolated crystal or is embedded in some matrix, is an attractive mineral specimen. Vesuvianite is generally mentioned in textbooks as a fairly common mineral occurring in contact metamorphosed limestone. But the literature on Vesuvianite insofar as its specific localities and types of occurrence are concerned, is woefully lacking A search of bibliographic literature for information concerning Vesuvianite is revealing in view of the following facts. In Geological Literature on North America, 1787-1918, by Nickels, there is no mention of Vesuvianite (or idocrase). The subsequent appendix to this volume covers the literature from 1919 through 1929 and again there is no mention of the mineral. In the Bibliography of North American Geology, 1929-1939, by E. M. Thom, reference is made to two articles, namely, Vesuvianite in New Hampshire, by Glenn W. Stewart, and Vesuvianite of Great Slave Lake Region, Canada, by Meen. In separate bibliographies published by the United States Geological Survey for the years 1942 and 1944 two articles are listed, one by J. A. Tremblay, Idocrase Morphology (Am. Mineral. Vol. 27, p. 234, Mar. 1942) and one by J. J. Glass and others, Idocrase from New Mexico, Am. Mineral. Vol. 29, May-June 1944. *Rocks and Minerals* published an article in Volume 2, p. 88, by Charles Marble, in which Vesuvianite is mentioned as "one of the minerals" at Greenwood Mountain, Maine, and again in Volume 2, page 33, Charles W. Hoadley mentions idocrase at Edenville and Amity, New York.

Dr. Frederick H. Pough reports that in the VESUVIANITE occurrence discovered about three years ago in Vermont, the best gem variety in this country has been found. The article concerning this Vermont locality was by Dr. Clifford Frondel and appeared in *Rocks and Minerals*, August 1946, pp. 490-491.

The writer of this paper therefore divides this article into two parts: Part I —Vesuvianite—Its name, its chemical composition and formula, and the geological origin and occurrence; and, Part II, A new Vesuvianite locality in Maine. The first part of the paper will bring together some of the scattered facts about this attractive and neglected mineral and place these facts in a single published unit. The second part of the paper will describe a more or less uncommon form of occurrence of the mineral Vesuvianite so that another locality may be made known to those interested in collecting minerals and to preserve a locality description for posterity.

PART I.

The Name—VESUVIANITE

The name Vesuvianite has priority over the name Idocrase which appears in many textbooks about minerals and in the few papers that describe the mineral. If one is searching the literature for information concerning the mineral VESUVIANITE it is always best to look also for the name idocrase in the index. In the 6th Edition of Dana's Mineralogy, page 477, there appears this statement: "Named Vesuvian by Werner from the first known locality. Werner supposed the mineral to be exclusively volcanic; but as this idea is not expressed, the name is no more objectionable than all others derived from names of localities. The earlier *Hyacinthine*, is bad, as the mineral is not the hyacinth of the ancient or modern time. Haüy's later name, Idocrase, subjective like many others of his, is from 'eidos' (Greek) to see and 'prassis' (Greek)

mixture, in allusion to a resemblance between the crystalline forms and those of other species. Nothing in its significance, or in anything else, makes it right to substitute this for Werner's name. In English, the name Vesuvian has the objection of being an adjective in form and use; but this is avoided by giving it the mineralogical termination above employed."

Dana's System has long been a "bible" for mineralogists but a glance through the various textbooks on mineralogy will indicate divergence in the use of the terms Vesuvianite and Idocrase. Seventeen mineralogical and petrographic textbooks were consulted in a search to determine which name was used most. No mention of either term is made in the 1908 Textbook of Important Minerals and Rocks, by S. E. Tillman, nor in Getting Acquainted with Minerals, by George L. English. Idocrase is listed exclusively in a Catalogue of American Minerals with their localities, by Samuel Robinson, published in Boston in 1825. IDOCRASE (Vesuvianite) is used in the Wiley, 1947, 15th Edition textbook Manual of Mineralogy, Dana-Hurlbut. VESUVIANITE (Idocrase) is used by A. N. and N. H. Winchell (Wiley, 1927, page 344); by E. Weinschenk (translated by R. W. Clark), page 233; and, by Kraus, Hunt and Ramsdell, in their 1933 Edition of Mineralogy, on page 345. In four different texts, VESUVIANITE (in heavy type and usually in capital letters) is followed by Idocrase in small letters and lighter type)., These four texts are Dana's Textbook of Mineralogy, 4th Edition, by W. E. Ford, 1926; L. McI. Luquer in Minerals in Rock Sections, 1913; Brush and Penfield, Determinative Mineralogy and Blowpipe Analysis, page 287, (Wiley, 1907); and, in Minerals and Rocks by George. VESUVIANITE (=Idocrase) is used by Rogers and Kerr in their Optical Mineralogy on page 315. VESUVIANITE is used exclusively by A. Johannsen in Essentials for the Microscopical Determination of rock-forming minerals and rocks; by Larsen and Berman, in Microscopic Determination of Non-Opaque Minerals, U. S. Geological Survey Bulletin, 848. and by Bayley, in Mineralogy, 1917. Bayley does not mention idocrase in either the index or in the text. In the Manual of Mineralogy and Lithology, James D. Dana, 1879, gives both names in the index but states on page 261, that Vesuvianite is preferred. Clarke, F. W., in his Data of Geochemistry, 5th Edition, U. S. Geological Survey Bulletin, 770, 1924, uses Vesuvianite only.

Neither the date at which a text or an article was published nor the fact that the writer might be American or European, indicate any specific chronological or racial preference for Vesuvianite or Idocrase. In scientific work the general rule is that priority of name has precedence and even though the original name of VESUVIANITE was VESUVIAN, it seems better to attempt to eliminate the name Idocrase and use the original name VESUVIANITE, exclusively.

THE HABIT OF VESUVIANITE

Vesuvianite crystallizes in the tetragonal system in forms that are usually simple prismatic combinations. There may be but one prism present or there may be several. A pyramid or a basal pinacoid may truncate the prism faces. The prisms may occur as single individuals or they may be grouped. When grouped they may be parallel or they may radiate. Cleavage is absent or very poor. The luster inclines toward vitreous. The color varies with the chemical composition and may be brown, green, brownish-black, gray, sometimes yellow or pale blue. The average hardness of the mineral is 6.5. The specific gravity ranges from 3.253 to 3.488.

THE FORMULA OF VESUVIANITE

A simple chemical formula cannot be written for Vesuvianite for there are too many variables that enter into its composition. Several simple formulas have appeared in textbooks. Larsen and Berman, page 88 of the paper cited, give the comparatively simple formula, $4CaO.\ Al_2O_3\ 4SiO_2.\ H_2O$. Rogers and Kerr give an equally simple formula, $Ca_2\ Al_2\ (OH,F)\ Si_2\ O_7$. On the truly complex side we

cite the formula given by Dana, page 519, Descriptive Mineralogy, Ca_6 [Al (OH,-F)] Al_2 $(SiO_4)_5$ followed by the explanation that the mineral is a basic calcium aluminium silicate, of uncertain formula, in which ferric iron replaces part of the aluminum, magnesium replaces part of the calcium, and fluorine and titanium may be present. Clarke gives the complex formula Al_2 Ca_7 Si_6 O_{24} R_4, in which R_4 may be Ca_2, $(AlOH)_2$, $(AlO_2H)_4$, or H_4. Larsen and Berman give another formula for Vesuvianite, one that is not only more complex but more complete for the mineral, 2(Ca, Mn, Mg,-Fe)O. (Al,Fe) (OH,F)O. $2SiO_2$. Glass and others indicate that beryllium is a constituent of the idocrase that they have found in New Mexico.

Similarity to Other Minerals

Vesuvianite is closely related chemically to at least four other minerals, with which it is associated geologically, namely, grossularite, meionite, zoisite, and anorthite. Each of these minerals is a calcium aluminum silicate found generally in limestones that have been affected by thermal metamorphism.

This chemical similarity can be seen more easily if the ratios are rearranged so that alumina is represented by the same number each time. The ratios are given in the order, CaO, Al_2O_3, SiO_2, H_2O. VESUVIANITE 12:3:10:2; Grossularite, 9:3:9:0; Meionite, 4:3:6:0; Zoisite, 4:3:6:2; and Anorthite, 3:3:6:0.

Variations in Chemical Formula

Published formulas indicate that at least twelve other elements enter into the chemical composition of Vesuvianite depending on the locality of the mineral. These elements, forming simple oxides, are reported: TiO_2 probably replacing some of the silica; MnO, FeO and Fe_2O_3 replacing alumina; fluorine and boric oxide which either replace part of the water, or are present as additions to the water; Na_2O and K_2O are present in variable amounts, the Sanford, Maine, variety shows the most soda; CuO and PbO have been reported; Glass reports beryllium; and, in most of the formulas studied magnesium forms a more or less substantial part of the chemical formula.

If the chemical analysis of the mineral Vesuvian, from its original locality, Mt. Vesuvius, is computed in terms of the formula for the mineral, it would be approximately, Na_2O. 9 M g O. 9 1 C a O. 4 Fe O. Mn O. 3 Fe_2 O_3. 2 3 A l_2 O_3. 8 8 SiO_2.7F.10H_2O. This formula begins to approach in similiarity at least the formula given by Larsen and Berman. If we eliminate the minor elements in the above formula, and recalculate on the basis of 100% a more simple formula would be obtained: MgO. 10CaO. $2Al_2O_3$ $10SiO_2$. (F,H_2O).

The writer of this paper is firmly convinced that the formula for vesuvianite ought to be re-written to include magnesium oxide as an essential part of that mineral's formula.

GEOLOGIC ORIGIN AND OCCURRENCE

Vesuvianite is known primarily as a product of contact metamorphism. The proper ingredients for its formation are found in aluminous dolomitic limestones and in calcareous shales that have been partially or completely decarbonated by the heat of an invading magma. Vesuvianite has also been reported in meta-

	Percentage of Oxides				Ratio of Oxides			
	CaO	Al_2O_3	SiO_2	H_2O	CaO	Al_2O_3	SiO_2	H_2O_2
Grossularite (brown garnet)								
Ca_3 Al_2 $(SiO_3)_4$	37.3	22.7	40.0		3	1	3	
Meionite (a scapolite)								
Ca_4 Al_6 Si_6O_{25}	25.1	34.4	40.5		4	3	6	
VESUVIANITE								
H_2 Ca_6 Al_4 Si_5 O_{25}	41.4	18.8	37.6	2.2	12	3	10	2
Zoisite								
H Ca_2 Al_3 Si_3 O_{13}	24.6	33.7	39.7	2.0	2	1½	3	1
Anorthite								
Ca $Al_2Si_2O_8$	20.1	36.7	43.2		1	1	2	

morphic rocks as gneisses, schists, serpentines and volcanics, but the usual host rock is metamorphosed limestone.

One of the most recently written papers on Vesuvianite (J. J. Glass, and others, Am. Min. Vol. 29, #5-6, pp. 163 et seq., 1944) states that a "Fibrous beryllium-bearing idocrase is widely but sparingly distributed throughout the ribbon rock tactite (in New Mexico), and occurs in larger concentrations in a heavily mineralized garnetiferous tactite on the west slope of North Peak and in a fluorite-rich tactite in the lower part of Discovery Gulch."

The most common mineral associates of vesuvianite are anorthite, calcic feldspars, calcite, diopside, epidote, grossularite, meionite, quartz, wollastonite, and zoisite. In addition, Glass reports chlorite, magnetite, tilleyite, and rhodochrosite. With exception of quartz and wollastonite, and the minerals reported by Glass, calcium aluminium silicates are the chief associates of vesuvianite. More information on mineral associations and origin is given in Part II of this article.

PART II.
NEW MAINE LOCALITY FOR VESUVIANITE

A new locality for VESUVIANITE is a welcome addition to those few localities already known in the United States. The new locality to be described was discovered sometime ago by the writer in company with one of his geology students.

The locality has been restudied and a record of the description of the mineral and its occurrence deserves a place in the reports on mineral localities. Vesuvianite was first found among the ancient ejections of Vesuvius and the dolomite blocks of Monte Somma. Since its original discovery it has been found in several places in eastern Canada, in California, in New York, in New Jersey, in New Hampshire, and at Phippsburg and Sanford, Maine. The new locality in Maine, Robinson Mountain, near Lewiston, adds a third locality for this state. The VESUVIANITE of Robinson Mountain shows a none-too-common habit for the mineral, in that it here occurs chiefly as radially divergent crystals of a light grayish brown to light clove brown color, figure 1. A more complete description will be given later.

How to reach the locality

Robinson Mountain is a low hill of metamorphosed limestone intruded by a pegmatitic granite and several basic dikes. It stands about 200 feet in relief above a glacial sand plain located in the south-central rectangle of the Lewiston, Maine, quadrangle published by the U. S. Geological Survey. It can be reached conveniently from Lewiston, which is 32 miles north of Portland on state highway 100. From Union Square, in Lewiston, route 196 is followed easterly on Lisbon street. At 4.6 miles from Union Square, turn left (north) at the grange hall at South Lewiston onto the Crowley road. In a short distance the road is crossed by two railroad tracks. Continue on Crowley road for a distance of 0.9 miles. The VESUVIANITE locality is located at about the 400-foot contour of the hill on the northwest facing slope. The outcrop cannot now be seen from the road because of heavy forest and undergrowth cover.

Geologic Occurrence

The VESUVIANITE-bearing "marble" belongs to the Androscoggin formation of lime-silicate gneisses that have been formed by metamorphism from an impure aluminous and magnesian limestone. The VESUVIANITE is more or less restricted to four outcrops on the northwest facing slope of the hill. One of these outcrops, the largest, is 34 feet long and 24 feet wide. If this first out-crop is located, the other outcrops can easily be found by continuing northeastward for about 250 feet to the second outcrop, 160 feet more in the same direction to the third, and about 500 feet farther in the same direction to the last outcrop. Numerous excellent specimens of VESUVIANITE can be found in the loose rocks on the westward and northward slopes of the hill.

The rocks on the southeastern side of Robinson Mountain are quartz-feldspar-biotite gneisses of the Pejepscot formation. There are no prominent mineral localities found in this formation except where it is intruded by large masses of

pegmatites. These gneisses are geologically older than the lime-silicate gneiss that carries the VESUVIANITE. The lime-silicate gneiss consists chiefly of quartz, feldspar whicl. is near labradorite, zoisite, diopside (of which some fine specimens may be found) and calcite. Locally, there are nearly pure beds of marble in the lime-silicate gneiss and it is in such beds that the VESUVIANITE occurs. An analysis of the "marble" beds of Robinson Mountain is given:—

SiO_2	43.44
Al_2O_3	11.57
Fe_2O_3	6.83
CaO	21.13
(CaO (Vol.)	7.62)
MgO	7.82
Ign. loss.	7.10
Total	97.89
Sp. Gr.	2.82

(*Explanation of analysis*—This is not a complete chemical analysis for other oxides were not included in the analysis which lacks 2.11% of being complete. The CaO (Vol.) is the CaO that is tied up directly as calcite. If this volumetric CaO is regarded as forming calcite then 5.9% of the loss on ignition must be CO_2. (This would give a sufficient amount of carbon dioxide to unite with the CaO to form calcite.) Deducting the 5.9% from the stated loss on ignition there remains 1.20% which may be regarded as water. This marble bed would therefore show the following ratios of oxides: SiO_2-6.0; Al_2O_3-1; CaO-3; MgO-2. The essential ingredients for vesuvianite, and for some of its associate minerals, are present in this "marble" bed.)

In the Robinson Mountain area it is apparent that the invasion of granitic and pegmatitic masses was fairly close to the contact between the quartz-feldspar-biotite gneiss and the lime-silicate gneiss and marble beds. The relative weakness of the quartz-feldspar-biotite gneiss and the strength of the pegmatite are responsible for the relief of the hill above the surrounding plain. The highest portions of the "mountain" are predominately pegmatite with occasional inclusions of lime-silicate gneiss in which no VESUVIANITE is found, but in which excellent specimens of diopside occur. At the best VESUVIANITE collecting area the lime-silicate gneiss strikes about N 40° E., and seems to be sufficiently resistant to erosion to form the outline of the northwestward slope of the "mountain".

Farther down the hill, on the west slope and below the main vesuvianite beds, there are two basic dikes, each about 2 feet wide, and separated from each other by about 100 feet. The lime-silicate gneiss, in the area adjacent to these dikes does not contain any VESUVIANITE but it shows some increase in the amount of calcite and diopside.

Descriptions of the Hand Specimens

Three distinct habits have been found for VESUVIANITE in the Robinson "Mountain" area. Each will be described and illustrated by pictures.

Type One—Radially divergent prisms of very narrow width are the predominant form of occurrence—figure 1. Fresh surfaces of the specimen show fan-shaped aggregates not unlike the common specimens of pectolite. The longest individual prisms are 7.2 cm. in length. One of these fan-shaped aggregates had a total spread of 9 cm. All of the fan-shaped aggregates show that the individual prisms in any one aggregate are truncated by other individual crystals belonging to other "fans.". In most of these "fan-shaped" aggregates the VESUVIANITE is a light yellowish brown color. The crystals seldom attain a width greater than 2 to 4 mm. and most of them are nearer the smaller size. These divergent, radial, or "fan-shaped" growths of VESUVIANITE are more or less universally crossed by small, almost imperceptible fractures that are, as a rule, at 45° to the long axis of the mineral.

Glenn W. Stewart, (Am. Mineral. Vol. 24, pp. 274-275) described VESUVIANITE in radiating columnar masses found in a water-worn ledge in a gravel pit near Center Strafford, New Hampshire. He notes that there are occasional single VESUVIANITE crystals with one or more distinct prismatic faces in pockets in the metamorphosed calcareous sandstone that forms the ledge. In the Center Strafford locality Stewart states that the VESUVIANITE has been replaced by

adularia, and is associated with epidote, diopside, and calcite. Stewart also reported another New Hampshire locality in which the VESUVIANITE is associated with scapolite and garnet in narrow calcareous bands in a biotite schist intruded by granite. This locality is near Manchester, New Hampshire.

Variation in Type A—A close study of the "fan-type" indicates that there are also spherical aggregations of VESUVIANITE—a mode much like stilbite. Here again, the radially individual crystals are truncated sharply at the periphery of their individual spheres by crystals that belong to another sphere. Where it has been possible to note this spherical development it is generally true that the center of radiation—that is, the center of the sphere—is usually darker than the periphery, and that in some specimens diopside, calcite, or meionite formed the center of the sphere. In one specimen of an almost complete sphere, the diameter of the sphere is 4.5 cm. Some quartz occurred with the VESUVIANITE prisms and the clear surfaces of quartz show indentations from the impressed VESUVIANITE which has been removed either mechanically or chemically.

Type B—Broader, coarser prisms occur in some places in the main outcrop. In one hand specimen there appears to be two generations of VESUVIANITE (figure 2). One generation is made up of closely packed parallel prisms—nondivergent—of clove brown color, each prism being about 1 cm. in width. Parallel to the contact of the VESUVIANITE crystals and parallel to the c axes of the crystals, is a zone about 2 cm. width (shown immediately about the 6 to 8 cm. markings on the ruler). The prisms in this zone are arranged at an angle of 45° to the vertical crystals. In this "vein" zone, the VESUVIANITE prisms of the "vein" truncate the c axes of the parallelly arranged VESUVIANITE crystals. Quartz has infiltrated into the zone and very minute VESUVIANITE crystals are embedded in some of this infiltrated quartz.

Type C—A third type of occurrence is in areas of vugs or cavities in the marble. This is the only type of occurrence at Robinson Mountain in which separate and

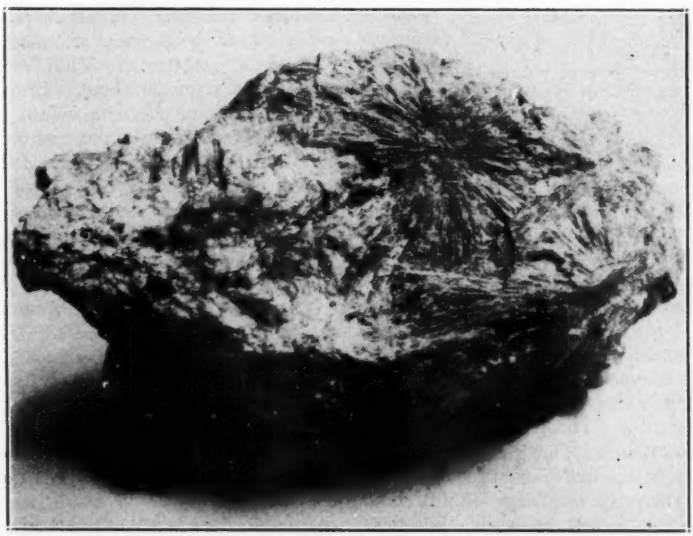


Fig. 1. Radially divergent crystals of Vesuvianite from Robinson Mountain area.

fairly good sized crystals of Vesuvianite are found. These crystals are generally darker in color and more lustrous than those that occur as Type A or B. Figure 3 shows such a specimen where the white end of a 2⅜" match, points directly to the top of a VESUVIANITE crystal projecting slightly from a cavity. The largest single crystal found is 1 cm. in width and 5 cm. in length. On this particular crystal the free end shows a perfectly developed flat, basal face, and eight prismatic faces —faces of the first and second order prisms—each face being about equally developed. Most of these vug-contained crystals had to be studied by the binocular and two especially interesting features are noted: first, calcite or quartz usually form the base or the lining of the vug although in a few cases scapolite was found; and second, many of these "vug-contained" VESUVIANITE crystals have been leached out along the line of the c axis. This is shown in figure 4, just to the left of the symbol V_1. Numerous solution openings can be seen—represented by the especially dark shadows—in figure 4.

Figure 4 represents a typical hand specimen of type C in which V represents a basal plate of VESUVIANITE, V_1, VESUVIANITE whose central core has been leached, and V_2 the broad, plated VESUVIANITE. The two light colored areas labeled Me represent Meionite, a scapolite; and the area labeled CC is calcite. The scale of the specimen can be obtained from the calcite which is one inch wide at the widest—top—portion.

The presence of so many VESUVIANITE crystals in which the central core has been leached out indicates that this axial direction is weaker—less resistant to chemical solution—than the direction of the other axes.

Associated Minerals—Other minerals, associated with the Robinson "Mountain" VESUVIANITE are diopside and calcite

Fig. 2. Broad coarse prisms of Vesuvianite from Robinson Mountain area.

in fairly large amounts in good sized specimens. There are some 5" rhombs in places. Brilliant green diopside, in short stubby crystals, is common, but is usually not found in contact with the VESUVIANITE unless it be at the point of convergence of the prisms in the "fan-shaped" aggregates. The largest diopside crystal found measured 15 mm. in length and 4 mm. in width. Scapolite is sparingly present and the variety meionite (figure 4) was determined by immersion oils. Purple fluorite is also found sparingly and usually occurs in small, ½inch, patch-like aggregates. Actinolite, measuring 2 mm. by 9 mm. was found in one specimen. Quartz is nearly always present as a "fill-in" mineral and seems to be the last mineral to have formed. NO grossularite or brown garnet has yet been found in close proximity to the VESUVIANITE of the area.

Origin of this Vesuvianite

Since in all published formulas of Vesuvianite the hydroxyl radical (OH) is present we must assume at the outset that water plays an important part in the constitution and the formation of Vesuvianite. Two divergent views of origin will be stated for the Robinson Mountain locality.

Most of the ingredients for the formation of VESUVIANITE were present in the original limestone before this rock was metamorphosed thermally by invading pegmatites and granites. It is probable that most of the water was contributed by the pematite or granite, along with the fluorine. Since both water and fluorine would exist principally as gases, pressure is required during the formation. A microscope study of thin sections of the metamorphosed rock shows that VESUVIANITE was one of the last minerals to form. In some cases quartz, and in other cases, calcite and quartz, were last to form. During the process of heat metamorphism most of the calcium carbonate of the original limestone would be dissociated and the carbon dioxide escape. Calcite now occurring with the VESUVIANITE was probably introduced later. It is the writer's belief that most of the VESUVIANITE of the area was formed as a direct result of the thermal metamorphism of an originally somewhat impure magnesium limestone by invading granitic and pegmatitic masses.

An alternative origin, one that might possibly explain the predominance of the "fan-shaped" or the "spherical aggregates" of VESUVIANITE, is difficult of proof but is presented nevertheless.

The most common associates of VESUVIANITE are quartz, calcite, scapolite, wollastonite, grossularite, diopside, and microcline. Quartz, calcite, scapolite, fluorite, labradorite-bytownite, and VESUVIANITE are associated in this locality. Harker, in Metamorphism, page 346, states that the replacement of grossularite by idocrase (VESUVIANITE) is very

Fig. 3. End of match points to Vesuvianite crystal in cavity in marble.

Fig. 4. A typical hand specimen in which V represents a basal plate of Vesuvianite, V_1, Vesuvianite whose central core has been leached, and V_2 the broad plated Vesuvianite. The light colored areas are Meionite (Me) and Calcite (CC).

common, either totally or partially. The opposite process has not been observed. He suggests that the change of grossularite to vesuvianite must take place at a rather early stage of cooling. The spherical form of the aggregates of individual prisms, in which nuclei of calcite or diopside, or quartz are present, suggests a replacement origin for this VESUVIANITE. The size of these spherical aggregates of VESUVIANITE is not larger than the size of the grossularite garnets found near Hebron, Maine, or Cornish-Limerick, Maine, where the host rock is similar to that of Robinson Mountain. A garnet form in which the dodecahedron is beveled by other isometric forms assumes a more or less spherical form. The spherical aggregates of VESUVIANITE suggest garnet as the probable original mineral since it is not now found in close association with the VESUVIANITE of Robinson "mountain".

Chicago Museum Curator On Field Trip

Dr. Sharat K. Roy, chief curator of geology at Chicago Natural History Museum, left Chicago Friday, Sept. 3, 1948, on an expedition to collect igneous rocks in the eastern states for approximately five weeks. A good part of the time will be spent in the Adirondack region, of New York. The field work will be a continuation of the project he began in 1946. The rock specimens are needed to fill existing gaps in and augment the systematic rock collection of the department of geology.

BUY U. S. SAVINGS BONDS

RAMBLES IN A COLLECTOR'S PARADISE
Part 5

By HORACE W. SLOCUM
320 Charlotte Avenue, Rock Hill, S. C.

THE LAST AND THE BEST

Perhaps not the best from a view point of minerals collected. But to me the two sunny days spent rambling about these locations has always seemed to have a charm that was lacking in other trips. Perhaps because I approached the places with a "I don't care if I find minerals or not" attitude. An unusual disposition for a collector. It was the first days of a vacation and a sense of freedom and release had taken over, which may account for the unorthodox behavior of my spirits. This day, too, I followed Agar's notes up to a certain point which I shall quote and which brought me to his road cut where "small crystals of pyroxene, apatite, titanite and phlogopite can be found."

Mr. Agar—quote—

"Go north out of Oxbow taking the first left hand turn across the marsh (route 185 Oxbow to Rossie) take the next sharp left hand turn which is 1.9 miles from Oxbow. Take the next right hand road ¾ mile west of here. The first locality is situated 100 meters up this road at the cut." End quote—Agar. *(Am. Min. Oct. 1921, p. 150).*

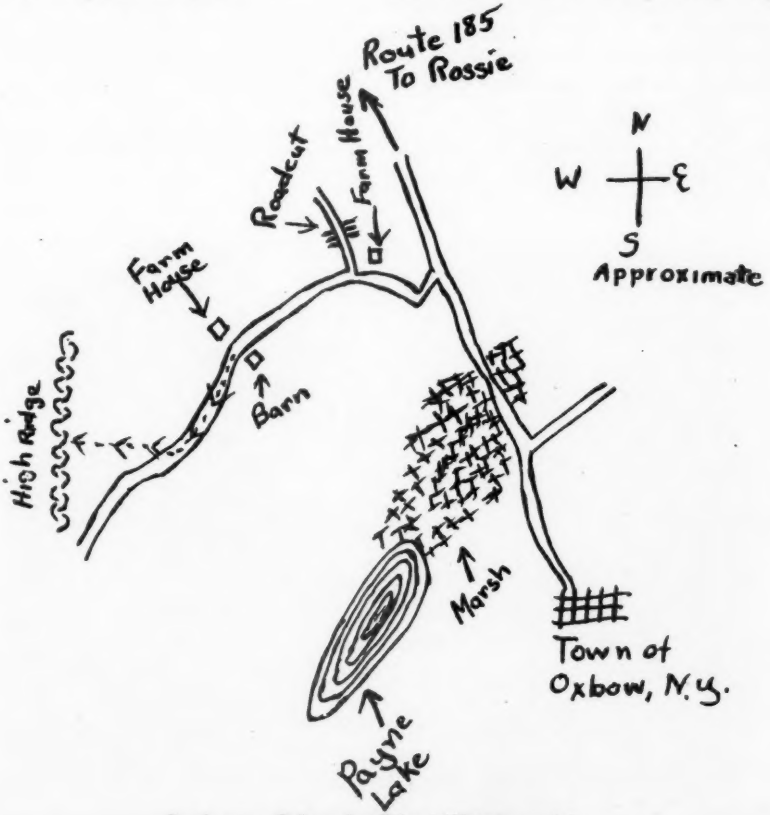
The above seems somewhat confusing so I will state these directions in a different way. Take route 185 north from Oxbow. In the distance of approximately 1 mile bear left at the fork in the road. Immediately you will start to cross a long marsh which lies at the northern end of Payne Lake. (See your topographical map.) Take the next left hand road (a dirt road) and follow for about ¾ mile. On your right a large farm house will be seen. Just beyond the house, perhaps 100 - 200 yards, a narrow dirt road will enter on your right. Park at the entrance of this road and walk north on it 100 yards which will bring you into the road cut. This is the locality mentioned above. I can't say much for the specimens here.

The road cut where pyroxene, apatite, titanite and phlogopite occur.

The best I got was a 1" twinned titanite crystal. It occurred in a small vug in one of the banks and I was able to chip it out, vug and all. The chondrodite and apatite are in grains about the size of a pea. The phlogopite in tiny ¼" crystals.

Before we go any further let me advise you to take along a compass when you try this ramble. Preferably one with an instrument attached so you may sight a line of travel a given number of degrees from any point. An alidade I believe it is called. You won't need a compass to find your way in or out for this country is mostly all open pasture. The directions which I shall quote from Agar are couched in terms of compass degrees. Because I did not have one I did not find more of the places he lists.

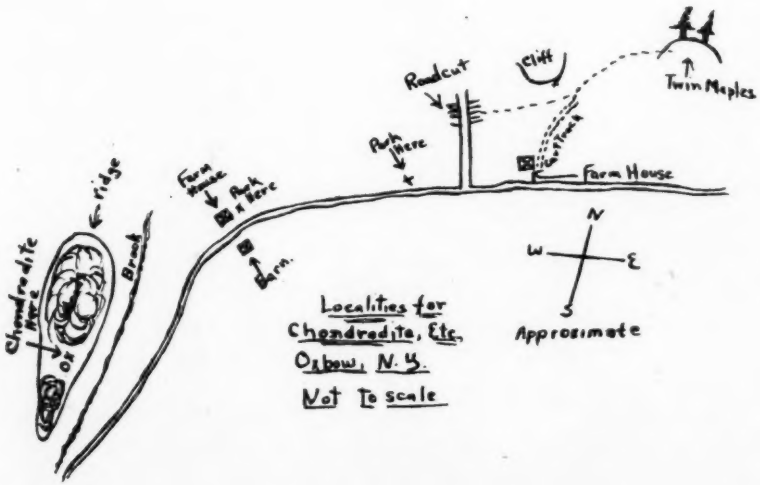
When you have finished inspecting the road cut take your direction east from here which will bring you some distance in back of the farm house. A cart track leaves the farm yard and you will intercept it in your travel. Where you meet this track or just beyond, on your left is a high ledge of limestone. There were a few brown tourmalines exposed in this ledge. Without considerable chisel work they could not be obtained. Also there was so much danger of spoiling them that I made no attempt to collect them. About 500 feet further east up the valley and to your right you will come upon a low knoll upon which two huge maple trees grow. They cannot be missed as few trees grow in these pastures. Agar says that under the trees there is a pit containing



Road map, Oxbow localities. (Not to scale).

phlogopite, apatite and some feldspar in good crystals. I found the trees easily, for as I said before they form a land mark here. But pit under them? No. Nor any sign of one. Note this however. Sheets of phlogopite were scattered in profusion around the base of each tree. Even to this day I scratch my head trying to figure that one out. The ground around these trees showed no sign of ever having been disturbed. There was no rock scattered here such as would be produced had a pit been blasted. There is of course, the possibility of a pit having been filled in. But in such cases a few broken pieces of rock are usually in evidence. Or a slight depression to show where the fill had sunk. There had been a pit, however, a short distance away. For as you stand under the two trees looking north, immediately before you a limestone ledge about 15 feet long and 3 - 4 feet high protrudes from the soil; it is almost in front of you. Several yards to the northeast of this ledge a single maple tree grows in the pasture. If you will sight between the right hand end of the ledge and the tree, possibly 20 - 25 feet beyond both, you will note a long narrow depression with a number of pieces of limestone scattered about it. This at first glance has the appearance of a natural crack in the limestone which has become filled with soil and fragments of rock. Digging up some of these pieces, however, will show them filled, or covered might be a better word, with translucent yellow green apatite crystals. I write crystals. Perhaps nodules would be more to the point. For they are striated, show no distinct crystal form except they are roughly columnar. In short they have the appearance of badly etched translucent crystals. Other minerals may be here for the digging, for as so often happens I had spent so much time reconnoitering I must hastily fill my bag and return to the car.

Other locations are in the immediate vicinity. I did not find them, for as I said before, a compass is necessary. I shall give them to you as Agar states them, wishing you the best of luck—and plenty of time.



Mr. Agar—quote.—

"North 28 degrees east from this locality (the hill of the twin maples) around the west end of a Potsdam sandstone mass, and in a slightly raised valley, there is considerable phlogopite and some chondrodite. 200 feet north 10 degrees east from here, over the point of a little hill there is a concentration of brown tourmaline, tremolite and boulders of phlogopite. About 50 meters northeast of the last locality but one, on the slope of a small hill, there are nodules in the limestone containing serpentine, chondrodite, spinel, and calcite.

"At the head of a valley of a small stream flowing northeast a little over 1/10 of a mile from the last locality and almost due north of it there is a cut in the limestone in which abundant apatite, green pyroxene, titanite and some graphite and brown tourmaline are developed." End of quote—Agar. *(Am. Min., Oct. 1921, p. 151.)*

Sounds good does it not? Well as I said before, I wish you luck and plenty of time.

When you return to your car which you left parked at the road intersections, continue west on the road on which you were traveling. Stop and ask permission to park at the next farm house. This house will be on your right. The barn is across the road. Continue on this road on foot for about ¼ mile. The road is all right to drive over but where you turn off there will be no place to park your car. After you have traveled this quarter mile you will see on your left a low brushy ridge extending back to the woods. On your right will be a meadow 200 or more yards across. A small brook runs thru the middle of this field. At the further edge of the meadow an abrupt boulder strewn ridge rises to an altitude of 50 - 75 feet above the meadow. Turn right, cross the field and climb to the top of this ridge. Follow the ridge to the southwest until the first and highest point is reached. Here you will come out of the woods into a small pasture. There is a landmark here that you cannot miss. A huge rounded boulder of limestone, much larger than any in the pasture. Fifteen or

View from hill of the twin maples. Pit is beyond and to left of the tree.

twenty feet from this boulder, back toward the woods and the height of land, broken white limestone ledges will appear thru the soil. Prospect the pieces from these ledges and dig some of them out. Many of them will contain nodules of chondrodite as large as an English walnut. The soil over this ledge is very thin. It may be hoed away to expose veins of this chondrodite which may be broken out of the limestone matrix. The very white limestone with the dark yellow nodules make showy specimens. On some of these nodules, and also in some of them, if you break them open, will be found pale violet crystals of spinel.

Agar tells of finding a crack in the limestone from which he dug out good crystals of spinel. I was not so fortunate. But I consider this place the best producer of chondrodite I have ever seen. I am going to give you the balance of Agar's directions on this locality. I searched long for them with no success. Your luck and perception may be better. They are not far and surely worth a try.

Mr. Agar—quote.—

"Nearly 1/3 mile southwest of here (the chondrodite vein) along the crest of the hill, there is a further concentration of wernerite, phlogopite, pyroxene and a little brown and black tourmaline in a pocket along the edge of a dike. About 30 meters south of here there is some chondrodite and pinkish spinel. 225 meters further southwest, at the head of the northeast pointing V in the northwest running road (you'll need a topographical map to figure this) there is a white limestone holding purple spinel and light green serpentine, yielding beautiful specimens. End of quote—Agar. *(Am. Min., Oct. 1921, p. 152).*

I never found these latter places tho I hunted long for them. Sometimes wonder if they have been covered by soil. The chondrodite vein was in such a condition. I would never have found it at all except for some float specimens which had remained on top of the ground. But I came away happy for all that for such good spinel and chondrodite specimens had never before fallen into my hands.

The above is the last ramble. How very

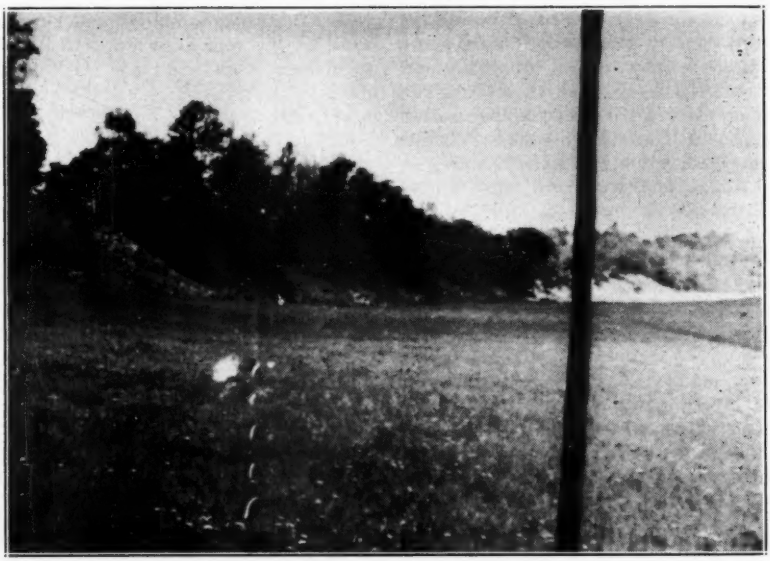
The chondrodite ledge is just beyond the boulder.

few interesting places it has covered. For in this country every ledge and outcrop holds a possibility. And the whole surface of this land which is not overlain with macsh and soil is a crumpled twisted and contacted mass of limestone, granite, syenite, serpentine and talc. Running in low ridges, outcropping in white ledges thru the soil of the fields and pastures. So many many places to prospect beside these that have been written about.

It has always seemed a shame to me that no native born person has done collecting and exploration here. Distances are not great; but the territory to be covered offers so many prospects that even such a person would be hard put to see and discover it all in a lifetime. And we who come into the country for a few scant week ends—what can we accomplish more than a futile scratching at some of the well known spots? Valiant spent many days here. Saw and collected more I expect, than any other. Agar must have had one whole summer here. And none of them or any of us that followed in their footsteps have seen all that this land can offer. What an opportunity is held out to the residents of Gouverneur, Canton, Natural Bridge and all the small hamlets scattered from Rossie to Antwerp, from Theresa to Fine! But the only thing I ever saw along collecting lines were the few sorry, unlabeled specimens in the Gouverneur Town House.

It has been a pleasure to write all this. A chance, too, in some small measure, re-live those sunny warm days of 1938. But the pleasure has not been without its tinge of sorrow. For I have longed thru

The chondrodite ledge exposed. This picture was taken looking towards the woods from the boulder shown in the previous picture.



Ridge on which chondrodite is found.

all these years to return. I know now, however, it was a futile dream. A dream wherein I would some time even throw up a good job, take the few dollars I had accumulated and return for one whole summer of collecting. Which is a very silly foolish hope for a man with a family. So I must be content to write about this country. To re-live these pleasant experiences by writing what I can remember of them. In closing may I do once more, what I have so often done in the previous pages. Wish all who come after, "Good Hunting—Pleasant Days."

(The End)

Central Valley Mining Meeting

How the San Francisco Chamber of Commerce developed an active mining program in Northern California was discussed by Lewis M. Holland, Chamber Industrial Engineer, before a mining meeting in Fresno, Calif., Friday, October 8.

The meeting was sponsored by the Western Mining Council and Central Valley Empire Association. It was attended by California's Federal and State Legislators, in addition to Mining Officials.

Purpose of the meeting was to create interest in and information about mining in the mountains adjoining Central Valley and to stimulate mining activities.

Natural Bridge, N. Y., Visited

Editor R & M:

Last week my wife and I visited the mineral pits at Natural Bridge, N. Y., described in the July, 1948, *Rocks and Minerals* (pp. 579-589). We picked up quite a few specimens near the Palmer farm. We found that Mr. Palmer had died some two or three years ago, but his widow of 82 is still living. She was kind enough to go with us to the quarry and show us where to find the minerals. The July issue showing pictures of the locality interested her a great deal. We promised to try and obtain one for her. I am sending 35 cents in hopes that you have one left.

Ervine D. Williams

Sept. 15, 1948 New London, N. H.

OUR SUMMER ACTIVITIES OF 1948

By E. LAWRENCE SAMPTER
49 West 45th Street, New York 19, N. Y.

(As read before the opening meeting of the New York Mineralogical Club—Wed., Oct. 20, 1948)

Our Summer was a rich one—mineralogically speaking—and it seems that the older we get, the greater becomes the urge to crack rocks so as to expose their well concealed crystals.

Our favorite location—Oxford County, Maine—was increasingly active. Some old quarries have been worked again and four new locations that promise to be good mineral hunting grounds next year, for collectors, are being opened now.

We visited 19 different quarries, 29 different times this Summer and enjoyed the company of over 30 active and enthusiastic professional and amateur mineralogists.

These included our fellow club members Dewitt Gutman, T. Orchard Lisle, Leonard Morgan, and Victor Pribil.

We were with such professionals as Prof. Clifford Frondel and Miss Mary Mrose of Harvard University; Prof. Vincent E. Shainin of the University of Maine; Ike Skillin of Freeport; Stanley J. Perham of Trap Corners and Howard Irish and Charles Marble of Buckfield, Maine.

We joined and went on field trips with the new Oxford County Mineral and Gem Club, so ably headed by Dorothy and Dana Putnam, of Rumford Corner, Maine. Enjoyed an evening at the Putnam home, where we saw their fine mineral collection and lapidary equipment. Had a most interesting club meeting with an exceptionally fine talk on geology and pegmatites by Prof. Shainin. He was there with his crew of college boys who were doing U.S.G.S. field work, trying to locate the now very strategic beryl, for the Government.

The highlight of our activities was actually getting gold by panning in the Swift River near Roxbury, Me., at the gorge where Carl Shilling has his cabin and has lived and panned gold for 25 years. This lone miner was most amiable and instructive. He showed us exactly how and where to work and we all found real gold in the black sand at the end of each laborious and back breaking pan of dirt. It does not pay, but was lots of fun and we look forward to another such perfect day.

We collected zeolites at Paterson, N. J., with Mr. Lisle, obtained the finest smoky quartz, microcline, apatite and white fluorite from Redstone, N. H.; fine beryl crystals from almost every quarry we visited, for my beryllium locality collection and tourmalines from Mt. Marie, Mt. Mica and Newry. My wife found even an unusually good pocket of purple apatites at the old Noyes Mt. quarry in Maine.

Dana and Dorothy Putnam of Rumford Corner, Me., in front of their home; active collectors and President and Vice-President of the new Oxford County Mineral and Gem Club.

Took the 40 minutes walk up Lord's Hill, at West Lovell, Me., 4 times. This newly opened and now abandoned, famous location, has had many collectors climb it in the past year and in spite of all that has been taken away, it still produces beryl, topaz, autunite, torbernite, fluorite, various micas, feldspars and quartz, chalcopyrite, zircons, phenakite, herderite, etc., etc.

Phenakite, which I was the first to find on Lord's Hill, in July, 1947, is the second occurrence of this rare mineral found in this vicinity. The crystals I found were verified by Dr. F. H. Pough, of the American Museum of Natural History, New York City, in September, 1947, and have been written up by him scientifically since then. The phenakite crystals from Lord's Hill, Me., are prismatic in habit and entirely different from those of the famous Chatham, N. H., locality, which is only a little over a mile west, by air.

Regardless of how old a quarry is, or how many collectors have worked a locality, there still always seems to be something of interest to be found, by the trained eye, in every old dump. My wife and Mr. Pribil picked up complete beryl crystals, in matrix, in the muchly overworked Bumpus quarry in Maine.

The best of all collectors' places in Maine now is old Newry, officially known as Little Plumbago. The Whitehall Co., of Keene, N. H., have drained the old pit dry, at the lower level, bulldozed the old dumps and opened a tremendous new cave from which they get the best grade of feldspar, in large quantities. We were there twice and in one wall I found my prize specimen of the year—a fine 2 inch triphylite crystal in its matrix.

A lot of massive triphylite has been mined there, as well as beautiful white beryl and very large crystals of spodumene. For collectors of rare specimens this new opening is an expert's paradise and far outshines the tourmalines still found on top of the mountain.

Mt. Marie—four miles N.E. of South Paris, Me.,—was worked for a few weeks

Mrs. E. Lawrence Sampter panning gold in the Swift River, near Roxbury, Maine.

and then abandoned. It produces fine tourmalines, arsenopyrite, quartz, pollucite, amblygonite, triphylite, lepidolite, montmorillonite, apatite, mica, feldspar, etc., etc. We collected there three times.

Spent two enjoyable evenings at Herb Haven's home in Portland, Me., with plenty of delicious candy and many interesting tales about minerals, quarries and his 30 years of collecting all sorts of objects of natural history.

Also visited these dealers again—Ike Skillin, at his shop in Freeport and Bickford in Norway, Me., Schortmanns at Easthampton, Mass., and spent some pleasant Saturday afternoons at our Mr. Ford's Mineral Store, 110 Wall Street, New York City.

Paid several visits to Perham's at Trap Corners, Me. Had a demonstration there of his new "Mercropon"—the gem cutting machine, which he has had made. It is the latest in lapidary equipment and he says it cuts stones better, faster and more economically than anything yet on the market. It is well made, compact and looks like something every lapidary will want to buy, with which to facet and polish his gem stones.

Due to Mr. Perham's enthusiasm for Maine minerals and his large stock of them and cheerful help, that he gives collectors in telling them just where to go and what to look for, at each location—he draws bigger crowds to his Maine mineral shop each year. His really excellent article, "Treasure Hunting in Maine", about Maine minerals and mineralogists, was published in this Spring's issue of the state magazine, "Pine Cone".

Again paid our annual call on Howard Irish and his family at their home—outside of Buckfield, Me., and had the surprise and pleasure of finding our friends —General and Mrs. Julian Hatcher there from Virginia. So we inspected Irish's treasures and went to Mt. Mica together for a most pleasant afternoon.

Eugene Andrews of Norway, Me., the 80 year young master cabinet maker and winner of all contests for old-time Maine fiddlers—playing his self-made violin—gave us the history of his finding the first, of the many amethysts, taken out of Deer Hill, Me. In 1875, as a boy, he picked up a pretty purple stone near his home, which was then near the base of Deer Hill. He gave this stone to his father, Edgar Andrews, who sent it to his brother Sumner Andrews, in Lawrence, Mass.,

Howard Irish (white hat) and Charles Marble (black hat) two of Maine's famous mineral collectors.

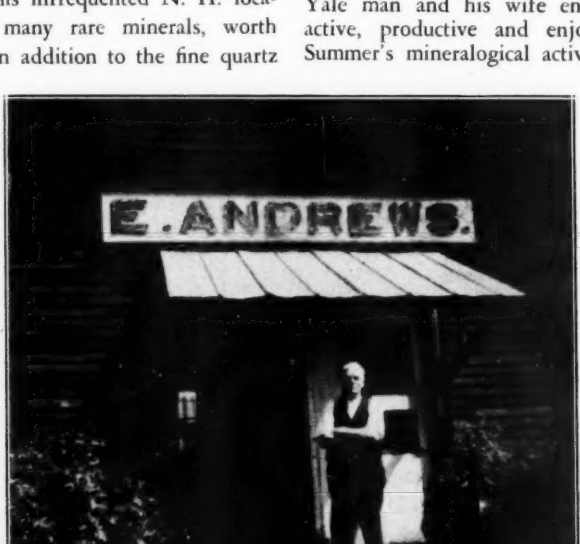
to be identified. It was the first Deer Hill amethyst found, and Sumner Andrews sold it to George Kunz in about 1885, with other amethysts which he subsequently gathered at Deer Hill, as well as topaz from Bald Face, N. H.

We met Millard Chandler at his home in Chatham, N. H., where we also saw his extensive mineral collection. This probably includes the largest accumulation of Bald Face topaz crystals, all of which he has gathered himself, on his very frequent climbs up the mountain, for blueberries and minerals.

Acquired good specimens of Milan, N. H., topaz and Stark Mt. large black quartz crystals and amethysts from Fred Goodwin of Berlin, N. H. with whom we hope to visit these localities next year. He is a real explorer, who likes to find and work new places, to which no other collectors have been. I was told by experts, that his infrequented N. H. locations have many rare minerals, worth going for, in addition to the fine quartz amethysts and topaz generally taken from there.

Miss Mary Mrose, who just had her masterly article on adamite published in the *American Mineralogist,* and Prof. Frondel of Harvard, visited near our camp. On our way home we spent a most interesting evening with them in Cambridge, Mass., seeing Harvard's wonderful minerals. The most thrilling sight there is the new crystallized gold collection, in its safety case, which is only a small part of the famous Burrage collection, recently willed to Harvard. They have in their fine museum, magnificent tourmalines, including the famous Mt. Mica specimens; as well as Lord's Hill phenakite, Palermo brazilianite and the finest gold crystals in this world. We saw their large mineral library, crystal models, synthetics and a staff of experts working hard to complete the new *Dana System.*

So—admiring Harvard's minerals— a Yale man and his wife ended a most active, productive and enjoyable 1948 Summer's mineralogical activities.



Eugene Andrews in front of his carpenter shop in Norway, Me. He is the man who found the first amethyst at Deer Hill, Maine.

TODAY'S BRAZILIAN GEM MARKET

By ALLAN CAPLAN
2 West 46th Street, New York 19, N. Y.

Mining activity of Brazilian semi-precious stones continues to be in a dormant stage since the end of the war. Production during the war was at its peak; a development which resulted from the wartime boom of the jewelry industry in the United States. The demand for Brazilian stones gave birth to a budding cutting industry in Brazil, which employed an estimated five thousand cutters. With the drop in the market in the summer of 1946, and a changing trend of style from gold to diamonds and platinum, the new industry dwindled away to its prewar status. There are a few lapidaries operating, and most cutters have drifted into other occupations. One would tend to believe that the present decrease in demand in the States would cause a considerable drop in price for rough gem material. The result, however, has been to the contrary, owing to various causes.

In the first place, the market in Rio de Janeiro which has always been active; if not in exporting to the States, then in the selling of stones to tourists from all parts of the world. It is true that tourists are now more limited than before the war; but the number of transit passengers from air and ship lines is greater than one would expect. There is also a limited amount of exportation to other South American countries, as well as to Switzerland, Sweden, France, and elsewhere.

Secondly, the Brazilians have always been strong for the finer quality goods. The average Brazilian is much better informed about semi-precious stones than the average American. This is only natural, since his country has been blessed with a wealth of this material. It is logical to understand that he therefore has a keen appreciation for beautiful stones, and he does not hesitate to pay a good price for fine quality.

Thirdly, the serious inflation which has more than tripled the pre-war cost of living has a strong and definite influence on the price of all items, especially luxury merchandise.

Fourth, and last, and perhaps the most important reason, is the loss in the market for cheaper quality and inferior goods. Possibly 90% of gems produced in a mine can be placed in that category. In prewar times the German buyers bought and exported to Idar, Germany, everything produced at the mines. Since the Germans had the lapidary industry well developed in Idar they were able to supply the world with all cuts and qualities. Mine operators had a paying proposition in those days. During the war, the industry was developing in Brazil with the United States taking practically the entire production. Since 1946, the market declined and the lapidaries and mines closed. In the meantime, fine grade goods continued in demand, but with less "garampeiros" searching for stones in the interior, the production of rough decreased. Few mines could continue to operate without a market for cheap quality goods. Diggings producing mainly good stones are few and far between; but these few continue to operate. Consequently, less stones are found in good quality and with strong competition to buy the gems discovered, prices are kept high.

News of the discovery of a fine stone travels rapidly and competative buying becomes keen, this is especially so for fine quality **aquamarine**. Such material is double pre-war price. Prices for fine quality cut stones in Rio de Janeiro equal those in New York, and sell with a quicker turnover. For this reason the importation of cut aquamarines of good quality into the States has practically ceased. An American buyer of rough finds tough competition with the active Brazilians. In cheaper qualities the competition is less keen, but prices are still higher than pre-war.

Beryls, both green and yellow, are obtainable, but certain types which turn blue on heat treatment bring the same price as natural blue stones of similar quality. One must be familiar with the

localities and varieties which turn blue in order to buy successfully this type of material. Morganite is not available on the market, although before and during the war, some interesting material was produced.

Emeralds of very pale quality have been found at Bom Jesus Dos Meiras, Bahia, but nothing has come from there for some time. In Conquista, Bahia, emeralds were found in recent years in a biotite schist similar to the Russian occurrence. No exceptional stones are found and hardly anything appears on the market. The state of Goyaz is another known emerald locality, but this locality has not been exploited.

Amethyst creates a different situation. In Campo Formosa, in the state of Bahia, a tremendous pocket of amethyst crystals was uncovered in 1946, a short time before the drop in the market. Previous to this discovery, good amethyst was difficult to obtain, and the price was firm and high. The new material is suitable for larger stones and those above fifteen carats have a strong color. An estimated ten tons or more of rough material, but not all gems, was channeled into the market without intelligent control and prices dropped considerably. Speculators bought large quantities of rough to hold for better prices. Since that time, however, great quantities of material have been cut and absorbed to the extent that rough material is not as available as it was two years ago. Prices have now stabilized for cut stones and the tendency is to remain firm.

Citrine comes from the states of Bahia and Minas Geraes at prices higher than pre-war times. Natural golden material of rich color seldom occurs; more often it is obtained in pale yellows. Rich golden stones are more apt to be the smoky-yellow variety which were heat treated in the rough. This process is hardly practiced due to great loss in material caused by the cracking of rough along flaws and fractures within the stone. The Brazilian cutters prefer to buy citrine smoky-yellow, and the darker the color, the better the quality. Heat treating is always done after cutting. By watching the change in color as heat is applied to a test-tube containing the cut stone, it is possible to obtain the shade of gold desired.

Heat treating rough from a variety of amethyst crystals found in Geodes, occurring in Basalt, is practiced in the state of Rio Grande do Sul. The resulting colors trend toward pale gold to red-brown. Clean stones of twenty grams are considered large, since average stones weigh about five. In Brazil these treated crystals are referred to as topaz. Production has practically ceased in these areas and good material exists in small quantities in the hands of few people.

Tourmaline production has been very small in general, although in the region of Barro do Salinas, Minas Geraes, pockets of exceptional fine quality were uncovered in 1946 when bright green crystals with the thickness of one's finger were obtained.

The availability of this rough has dented the previously very high price for this same quality material. Very little green from other localities have been offered in the market. Lots are generally of poor quality. Rubellites and pink tourmalines have not appeared on the scene. Generally such material is associated with mica at properties which are worked constantly for the latter mineral.

Imperial topaz in the region of Ouro Preto, Minas Geraes, is constantly being searched for. Unfortunately, the production is small and desired lots of clean stone capable of giving gems of ten carats or more are something to dream about. Such gems bring prices in Brazil equal and higher than prices paid in the States. Rare stones in colors of purple and red are prized by mine operators and even exceptional prices do not tempt them to part with these prizes.

Blue topaz in deep color is as rare as any Brazilian gem. Such pebbles when found are never in large clean pieces. Prices commanded are equal to aquamarine in deep blue stones in spite of its heavy weight. Pale varieties also in pebble form are available in large masses, but also badly flawed. Cut stones in pale

qualities have no demand in the Brazilian market and the rough can be had rather cheaply. The problem is to find clean stones and when selection from lots are desired, prices commence to double.

Garnets were mined and cut during the war for exportation. This was the variety mined in the state of Ceara, of a quality too dark and flawed to cut good 10 x 12 millimeter stones. The property is not operating since there is no demand for this merchandise at this time. There are other localities but these are also inactive. Recently hessonite has appeared on the market but only in small cut stones about a carat each. A few beautiful stones, about 5 carats have been sold at extremely high prices in Brazil, and in the States rather recently.

Chrysoberyl catseyes and chrysolite never have been found in any quantity, and good stones are a prize. Rarely are catseyes of ten carats obtained, and the quality is not comparable in color to the Ceylon stones. Chrysolite is found in colors from yellow brown to the very beautiful bright lemon colored stones which bring prices higher in Brazil than in the States. Stones up to eighty carats or so have been obtained, and when properly cut to bring out the brilliance, has a fascinating color under any kind of lighting.

Andalusite, one of the most unusual Brazilian gems, can be had from time to time. Finding clean stones of any size is a problem since most of the material will cut only one carat gems. Both small pebbles and cleavage fragments can be had in shades of green, pink, and gray. Faceted gems of ten to twenty carats are unusual and anything above that in size is a rarity. Perhaps one of the most exceptional finds of this mineral was an eighty carat gem crystal uncovered this year. No attempt is made to mine for this stone since its rarity makes it a "collectors stone". All finds are made during the search for other gem minerals.

From a vast interior far from developed, stones strange to Brazil trickle into the market from time to time. Gem specimens of ruby, sapphire, iolite, cyanite, green apatite, and a milky variety of opal have filtered in from unusual sources. An attempt was made to market the opal but only inferior qualities have been offered, although a few fine stones were obtained.

The extent of Brazilian gem mining depends on international, political and economical developments. No matter what may develop in the future, however, "garampeiros" will continue to dig for gems. They have always managed to find a buyer for their good stones, and this encouragement has kept them searching for new finds.

Gem Exchange Issues New Price List

Gem Exchange, Bayfield, Colo., has just issued their 1949 Preliminary Price List. It is 4 x 9¼ inches in size, contains 20 pages and is devoted to gem cutting materials and supplies. Many minerals of special interest to cutters are offered for sale in this price list. Send for your copy today. It is free for the asking.

BIBLIOGRAPHICAL NOTES

Mineral Composition of New Hampshire Sands

by J. W. Goldthwaite

A 7 page publication covering the examination of sand occurrences in many parts of the state.

Glacial Till In New Hampshire

by Lawrence Goldthwaite

An 11 page publication covering a survey of glacial till occurrences in many parts of the state.

Both publication have a colored geological map of the state. These publications are listed as Part 9 and Part 10, respectively, of the Mineral Resource Survey and sell for 10 cents each. For sale by the New Hampshire State Planning Commission, Concord, N. H.

The Drum Mountain, Utah, Meteorite

by E. P. Henderson and S. H. Perry

A description of the meteorite (with 5 plates) that was found on Sept. 24, 1944, by two Japanese men, Yoshio Nishimoto and Akio Ujihara. (The finding of this meteorite was announced in the March, 1945, issue of *Rocks and Minerals*, pp. 110-111).

This 7 page report has been issued as Publication 3946 by the Smithsonian Institution, Washington, D. C.

VESUVIANITE CRYSTALS FROM ESSEX COUNTY, NEW YORK

By ELMER B. ROWLEY
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Vesuvianite is neither a rare nor uncommon mineral species, but choice crystals of it are found in only a few noted localities throughout the world. It was first noted in the rock representing ancient ejections from Mount Somma, Vesuvius, and from this occurrence was called Vesuvianite. From its association the mineral was thought to be entirely volcanic in origin. However, Vesuvianite was later found to be a product of contact metamorphism in impure crystalline limestones, in association with garnet, wollastonite, diopside and tourmaline. The mineral was later renamed by Dr. Hauy, Idocrase, from two Greek words, edios and crasis, signifying "like" "mixture", alluding to crystals displaying forms which had been mistaken for crystals of other minerals.

The discovery of a new locality which produces exceptionally choice Vesuvianite crystals is consequently of great interest to the mineralogical fraternity. During this past summer the writer has been obtaining superb crystals of Vesuvianite from a locality in southern Essex County, New York. The exact location is on the south side of the Olmstedville-Minerva road approximately one mile west of Olmstedville. The pit is situated in a field about 150 yards east of the bridge which crosses Minerva Creek.

Vesuvianite is essentially a hydrous calcium aluminum silicate, $Ca_{10}Al_4(Mg,Fe)_2Si_9O_{34}(OH)_4$. Magnesium and iron are usually present in varying quantities. Vesuvianite crystallizes in the tetragonal system, with the more common forms being first and second order prisms, unit pyramid, and base. Its hardness is $6\frac{1}{2}$, with brown, green and black colors predominant; more rarely, red, yellow and blue. The luster is vitreous to resinous.

The geological formation in which the Vesuvianite from this new locality is found is known as Grenville limestone, a type formation quite common throughout the Adirondack region. These Grenville limestones are the metamorphosed sediments which underlay most of this region before it was intruded by extensive igneous activity during Precambrian time. The gabbros and syenites comprising the greater portion of the Adirondack region are very efficient agents of contact metamorphism. The limestones and sandstones through which these intrusions were thrust are readily affected by such contact. Limestone alters from an amorphous calcium carbonate, of a sedimentary character, with bedding planes and rich in fossil content, to crystalline calcite. The impurities present in the limestone produce various species of minerals, the variety depending upon the type and abundance of impurities in the parent limestone. The more impure the limestone the greater the variety of minerals, while fewer varieties will be formed from metamorphosed limestones of nearly pure $CaCO_3$.

The chief mineral constituent of the Grenville limestone formations is calcite occurring as grains of varying size, ranging from tiny grains, to masses from which cleavage blocks several inches in diameter may be obtained. Nearly all of the calcite cleavages from the Vesuvianite locality exhibit diagonal striae across the rhombohedron faces indicating the mass is twinned. Other minerals commonly found in Grenville limestones include diopside, graphite and tourmaline.

Nearly all of the Vesuvianite crystals at this locality are incomplete owing to their intergrowth with the calcite, and most unfortunately are quite friable. The predominant crystal form exhibits first and second order prisms and a base. The unit pyramid in most instances is completely lacking, or present only as a line truncating prism and base faces. Some crystals do show, however, well developed unit pyramid faces, with occasional second and third order pyramids.

Apparently there has been considerable

secondary development of these Vesuvianite crystals as evidenced by several unusual characteristics. Nearly all of the angles between crystal faces show rounded edges as if those angles had been partially fused, very similar in habit to the Renfrew Apatite crystals, or even closer to this locality, the Apatite crystals found at Gouverneur, New York. Associated with this apparent fusion of the crystal angles is an unusual waxy-luster of the entire crystal, indicative of a fusion of at least the exterior portion of the crystals. Such a secondary fusion would account most satisfactorily for the exceptionally brilliant luster and apparent translucency of the crystal faces. Still other Vesuvianite crystal faces exhibit solution pits which could only be the result of a secondary solvent action on those faces. There may be some relationship between these physical characteristics and the Wernerite, which, as remarked elsewhere, appear to have been melted into the Vesuvianite.

The color of this Vesuvianite ranges from light brown, with diagonal bands of lighter golden brown transversing the crystal faces, to a deep, almost chocolate brown. There is a deceptive translucency on the crystal faces owing, at least in part, to the brilliant luster of those faces, adding in no small measure to the beauty of these crystals.

At varying levels beneath the surface of the Grenville limestone outcropping are more or less horizontal layers of coarse-grained calcite, and it is within those bands of coarser crystallization the finest Vesuvianite crystals are found. Usually the Vesuvianite is found concentrated in "pockets" within which the Vesuvianite and calcite are intimately intergrown. Occasionally single isolated crystals are found outside of those zone layers but they are the exception not the rule at this locality.

The Vesuvianite crystals are so intergrown with the calcite of the Grenville formation that crystal grains of calcite are commonly found enclosed within the Vesuvianite. Calcite is not, however, the only mineral found in intimate association with the Vesuvianite, as one crystal collected by the writer encloses a small, perfect, Augite crystal. Other crystals are intergrown with white Wernerite, occurring as milky-white, glassy granules and crusts on the surface of the Vesuvianite crystals. The Wernerite has the appearance of having been melted into the surface of the Vesuvianite crystal to such a degree that the external symmetry of the tetragonal crystal is retained. The writer collected one Vesuvianite crystal intergrown with Wernerite so as to form a half and half combination which together form a nearly perfect tetragonal crystal of excellent symmetry. One half is milky white, the other half a very light cinnamon brown.

This intimate association and inter crystallization of various minerals certainly indicates the period of crystallization was contemporaneous. This intercrystallization might be explained as a result of crowding in a general plastic magma, of a general crystallization throughout the entire mass.

One Vesuvianite crystal collected by the writer measures 5" (a^1) x 3½" (a^2) x-3¼". (c). Crystal faces present are first and second order prisms and both basal pinacoids. Another crystal measures 4½"-(a^1) x 4¾" (a^2) x 3½" (c). with both first and second order prisms, ditetragonal prisms, unit pyramid and a basal pinacoid.

Other minerals found at this locality include white, yellow and green apatite. Pyroxene, var. Augite in stout prisms, with two crystals collected by the writer showing perfect pyramidal termination faces. Flakes of graphite are of common occurrence in the calcite.

A trip to the locality made on Oct. 9, 1948, produced the following additional mineral specimens:

A perfect quartz crystal of a color and luster like vitreous porcelain.

A stunning crystal of Wernerite of outstanding quality and symmetry with other crude crystals of Wernerite.

Beautiful cleavages of Adularia (Orthoclase) feldspar.

Aragonite (Flos-ferri) of exceptionally choice quality covering Calcite masses on top of Vesuvianite.

MONAZITE OCCURRENCE AT YORKTOWN HEIGHTS, N. Y.

By O. W. BODELSEN, President
Rocks and Minerals Association

Some few years ago while looking through Dana's *System of Mineralogy* for nearby localities, one of the first I noticed was the sillimanite-monazite occurrence at Yorktown Heights, N. Y. This locality is mentioned as early as 1840 by Benjamin Silliman, Jr., who reported good monazite crystals from there. Specimens sent to him contained small colorless prismatic crystals of monazite in the quartz adjoining magnetite.

Dana's *System* describes the locality as near the road leading from Pines Bridge to Yorktown Heights, N. Y. This seemed a very convenient source of some nice specimens for my collection as it was only a few miles from my home; I had been over Pines Bridge hundreds of times. Upon inquiring of Peter Zodac, our Editor, as to the exact whereabouts of the occurrence, I was disappointed to hear that it was one of those lost localities which he and others had tried desperately to relocate; he had made many inquiries about it but to no avail.

During the ensuing years I passed over Pines Bridge many times again on my way to Peekskill to call on Mr. Zodac with whom I made quite a number of trips to localities near and far. Everytime I would go over the bridge I would think of those wonderful monazite crystals which I must be passing by.

Late in the fall of 1941 I chanced to read about a tablet having been placed on a house on Hanover Avenue near Yorktown Heights to commemorate it as being the place where Major Andre had stopped in his journey during the Revolutionary War at the time of Benedict Arnold's treason. Hanover Ave., I thought, must be the old road I am looking for. Inquiring of some old natives revealed that Hanover Ave. was the old original Pines Bridge-Yorktown Heights road, now little used.

One day the following summer, June 28, 1942, found Mr. Zodac and I, on Hanover Ave. We started our explorations at the Yorktown Heights end. In the very heart of Yorktown Heights, we turned left off N. Y. 100 at the railroad crossing and ½ mile further Hanover Ave. begins (Katonah Road here crosses). We began to examine every bit of outcrop from the very beginning of Hanover Ave. walking all the way, Mr. Zodac taking one side and I the other, but not until we had traveled 1.7 miles did we find anything of interest. When we reached this point Mr. Zodac suddenly exclaimed: "Here, this looks like sillimanite!" I rushed across the road. It surely is", I agreed.

Further search revealed good sillimanite specimens some coating magnetite, but no monazite. This was surely the right locality and though we obtained a number of specimens those good monazites have not yet been found, although on a later trip some nice crystals were obtained. One mile further Hanover Ave. terminated at N. Y. 100 (0.4 miles further to left is Pines Bridge).

Geology

Hanover Ave. is 2.7 miles long and the rocks for almost its entire length is mica schist (Manhattan Schist) with very small dikes of pegmatite; some gneiss is also present. These rocks outcrop along the edges of the road and the only mineral of interest in them, outside of the sillimanite occurrence, is almandite garnet which occurs as tiny red grains and crystals.

Sillimanite was spotted by Mr. Zodac as a 6 inch vein in mica schist on the right side (west) of the road. The schist outcrop is 50 ft. long and 6 ft. high and the sillimanite was found in about its center. W.L.C. pole #41 is at the southern end of the schist outcrop.

About 40 ft. north of the schist outcrop and to the left is a small roadway which goes in about 300 ft. About 15 ft. in this roadway and again to the left, sillimanite is found in large boulders and a ledge which extends for 50 feet paralleling Hanover Ave. It was here where we obtained our specimens as the road cut

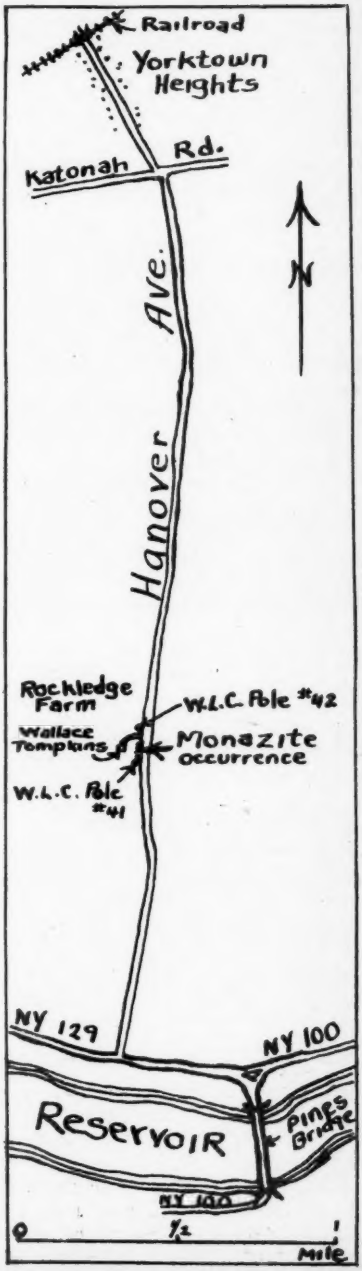
was too hard to work and the vein did not look promising. The boulders and ledge occur on the Rockledge Farm, the property of Alexander Falconer. Though we examined the terrain carefully on both sides of the road and for some distance, no other occurrence of sillimanite or magnetite was found.

SILLIMANITE CARTED AWAY FOR FILL

During the summer of this year (1948), I paid the locality another visit but to my very keen disappointment found that the loose boulders were no longer present—the dug-up terrain indicated that they had been carted away. As I had only a few minutes to spend, I did not tarry long to investigate their disappearance. Mr. Zodac was notified, however, and at his first opportunity visited the locality. This visit was made on Thursday Aug. 26th, and he was accompanied by Mr. William Yates, Jr., of Ossining, N. Y., a student at Williams College, in Williamstown. Mass. Here is Mr. Zodac's report:

"A house has been built on the property, about 300 feet away, and all the sillimanite boulders, but one, had been carted away for fill and are now buried under or around the house. The one boulder remaining, 2 x 2 feet in size, must have been overlooked or else it was not needed. The owners of the property are Mr. and Mrs. Wallace Tompkins. Mrs. Tompkins was at home and noticing our movements came out to investigate. She was a most gracious and charming young lady and only too willing to help us with our investigations. She it was who told us that the boulders had been used to fill up the low spots around the house and of course was greatly concerned on hearing what valuable minerals had thus been carted off and buried. She very kindly gave us permission to investigate the many rock outcrops that seemed only too evident to be present on their large property. This we hope to do later in the year as the terrain is covered now with too much vegetation.

"The irony of the boulders being used as fill is that Mrs. Tompkins' father, Mr. Alexander Falconer, who resides on the adjacent property to the north, was with



the U. S. Bureau of Mines, at Washington, D. C., during the late war; that he had gotten together quite a collection of minerals which he presented to the Yorktown Heights High School, about 8 months ago. Apparently he never saw the boulders and no one else was familiar with minerals to note that material valuable to collectors was being used as common ordinary rock."

Mineralogy

Among the minerals found at the locality were:

Albite: Cleavage plates in a small cut on the opposite side of the road.

Apatite: Grayish-green crystals of poor quality.

Biotite: Very plentiful, sometimes forming biotite schist (mica schist) and some specimens pleochroic.

Garnet: (Almandite) Small reddish crystals generally of dodecahedral habit.

Magnetite: Small masses in the sillimanite and sometimes penetrated by the sillimanite crystals.

Monazite: Several years went by, after our visit to the locality, and I was preparing to give up all hope of ever finding even one monazite. One day, in idle curiosity, I began to break up the specimens brought home into very small pieces when lo and behold! I had monazite. The mineral occurred as minute brownish crystals and crystal masses associated with the magnetite (some embedded in the magnetite). One loose crystal—the largest and best found—is about $\frac{1}{8}$ inch in diameter, but it is a perfect specimen. It seems obvious, that in order to find monazite one must break up the rock into $\frac{1}{4}$ inch or smaller pieces, the mineral is there but you must hunt for it.

Sillimanite (Fibrolite): Common as grayish, compact columnar masses with magnetite in mica schist.

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ANOTHER STONE FACE

By ANTHONY THURSTON

U. S. Veterans Hospital, Rutland Heights, Mass.

In the town of Freetown, better known to the local people as Assonet (in southeastern Massachusetts), one can find Joshua's Mountain, famous for its old stone face. On a hill of granite some 200 feet high, the "Old Man" looks out over the countryside as he has done, with probably little change, since the glacier crumbled a portion of the ledge and set him erect.

Although in most cases the resistant ledges in this region have had their north sides polished and their south faces plucked and covered with broken rock, this particular mass is the exception. The southern slope is wooded except near the top, whereas the northern is a mass of broken and tumbled granite blocks. It is the largest of these which has been poised on end and forms the face. The "Old Man" is about 25 feet from chin to the top of his head, and shows an excellent profile from either side. Of course there are several choice spots where the face shows most clearly, but from almost any point east or west of the hill the profile stands out like a sore thumb.

The face has been known since Colonial days for the hill gets its name from Joshua Tisdale who settled on the 23rd lot of the Freeman purchase. I have been unable to learn whether or not the Indians recognized the face or attached any significance to it. It is so clear though that they could hardly fail to recognize the resemblance to a human.

It is not difficult to reach the spot and it is often the site of picnics. On several

occasions it has been the scene of Easter Morning Services. To reach the old stone face from Fall River, Bristol County, Mass., proceed north on North Main Street for a distance of about 7½ miles from City Hall. Make turns right or left from this road until the village of Assonet, town of Freetown, is reached. Take sharp right here just over a small bridge. Drive about one-tenth mile to a fork and take right again. Continue up hill about ½ mile until you cross the railroad tracks. Stop at first house on left immediately beyond the tracks. Inquire here and secure permission. The road to the mountain is to the right of the house and used to be passable in dry weather to the foot of the hill, but as it is only a walk of about ¼mile you are advised to leave your car at the entrance. The face is located by following this road straight through until it narrows to a foot path and skirts the base of a steep hill. As you reach the farther end and the slope on the left becomes more rocky, look toward the summit and the face will be seen. The best view may be found by ascending a smaller ledge on the right and looking across the valley, as in photo 1. Photo 2 is a close-up from beside the figure.

Fig. 1. The Old Stone Face as seen from a nearby hill.

Fig. 2. Close-up view (east side) of profile of the Old Stone Face on Joshua's Mt., Assonet, Mass.

PRE-CAMBRIAN CONGLOMERATE NEAR PEEKSKILL, N. Y.

By THOMAS W. FLUHR
Downsville, N. Y.

Peekskill lies at the southern edge of a belt of rugged hills known as the Highlands of the Hudson. The bedrock underlying these hills is a series of gneisses, schists, and metamorphic limestones, together with associated igneous intrusives, including granites and diorites. The formations are, at least in great part, of pre-Cambrian age. One of the metamorphic limestones has been described by C. P. Berkey under the name of the Sprout Brook limestone.

On August 20th last, while Dr. Berkey and the writer were looking for an outcrop of the Sprout Brook limestone on the north side of Peekskill Creek, we noticed an unusual outcrop which had not been exposed previously. It is in a sand pit and has been exposed by removal of the sand. The sand pit is on the Roa Hook road, north of Peekskill Creek, midway between the Bear Mountain Bridge road and the Albany Post road.

The outcrop is mainly metamorphic limestone, probably part of the Sprout Brook limestone belt. It has been smoothed by glacial ice. Within the limestone are thin interbedded layers of hornblende gneiss. The limestone also carries pebbles and small boulders forming a conglomerate layer. The pebbles and boulders include gneiss, schist, granite, metamorphic limestone, and what appears to be quartzite. There are also streaks of limestone which has been converted into marble.

The parallelism of the conglomerate layer to the foliation of the limestone and interbedded hornblende gneiss shows that some of the foliation of these metamorphic rocks is representative of an original bedding structure.

The conglomerate layer also indicates a break in the series, an unconformity, or gap in deposition of sediments. The Sprout Brook limestone probably is younger than some of the other formations of the region.

This is the first time a conglomerate has been observed in the Highlands gneiss series of formations. It is a worthy addition to the other unusual geologic features observable in the vicinity of Peekskill.

GEOLOGICAL OBSERVATIONS

A LESSON ON SERPENTINE WEATHERING

It was some years ago that I first heard of Brown's serpentine quarry located near Carmel, N. Y. I had at that time acquired a copy of Mather's *Geology of New York*. 1843, in which the author spoke in glowing terms of the fine quality of the *black* serpentine of Brown's quarry (p. 462). Carmel is about 15 miles northeast of Peekskill and at my first opportunity I went to visit the locality. But alas, no one that was approached in Carmel had ever heard of Brown's quarry nor of such a rock as serpentine. Apparently the quarry had been abandoned many years ago and all traces of it was lost.

On one of my later trips to Carmel (the county seat of Putnam County), I noticed a very old map hanging on the wall of the courthouse. Close examination of this map showed the location of Brown's quarry, only a few hundred feet west of the arsenic mine for which Carmel is noted. It looked easy to find but once at the mine I searched everywhere but no signs of a quarry, nor of serpentine, could be found. At one point in the search I ran across some large boulders of a most unattractive appearance—dull, dingy-brown color. They puzzled me however, as they had a rectangular look, as if they had once been quarried. I gave them only a cursory glance and passed on, keenly disappointed.

On arriving home, I began to think over in my mind about the trip. Those curious rectangular-shaped boulders kept popping up in my mind as to give me no

rest. What could that drab-looking rock be? The area was full of it and though no serpentine was found, this unknown rock might prove of some geological interest. How I regretted that a specimen had not been broken off and brought back with me for examination.

Within a few days I was back again at the locality where I cracked off a corner of a large boulder. I gazed in astonishment at the rock before me. It was serpentine! The interior was deep greenish black of a very pleasing texture. I had handled a large number of serpentines of all colors and textures but never before had seen an outcrop of it nor had any idea that the beautiful rock would weather so unattractively. The rectangular-shaped masses were not boulders at all but blocks that had been quarried over one hundred years ago and during the course of years and weathering this feature was almost obliterated.

And to my very deep embarresment, it soon began to dawn on me that on my previous visit when searching for the quarry, I had been standing in the very center of it and never realized its presence. The quarry of course was very small, about 15 feet in diameter, and the rectangular-shaped blocks in it were "hiding" the excavation.

Peter Zodac

ONYX QUARRY AT TOLENAS SPRINGS, CALIF.

By R. F. HENLEY
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In February, 1948, Mr. and Mrs. Ed. Gilmer and I went to a quarry at Tolenas Springs near Fairfield, California, where we obtained some travertine onyx which makes fine ash trays, book ends, etc. This quarry was at one time visited by some French who shipped a third of a sailing ship cargo to France where it was made into novelties and returned to be sold back to us.

At Fairfield the counter and wainscot of the First National Bank is made of slabs of this travertine, workmen having been brought from Italy to prepare it. Last year some men set up a crusher and were crushing up the stone for chicken feed to provide mineral for making egg shell but the effort was soon abandoned. At the point in the picture where Mrs. Gilmer is standing is a bubbling spring which is still making travertine. Years ago this water was being bottled and shipped to San Francisco where it was sold as mineral water.

The onyx quarry at Tolena Springs, Calif.

DYER'S APOPHYLLITE

By CHAS. A. THOMAS
706 Church Street, Royersford, Pa.

On Pennsylvania Route 83, better known in the northern part of Chester County and in the southern part of Berks County, as the Schuylkill Road, there is a small village with the Indian name of Monocacy. It is a mile east of Birdsboro and just a few miles west of Pottstown. We do not remember what the name Monocacy means in Indian, but to the mineral collector it should mean "place of hidden crystals". The exact locality is actually about a mile and a half due west of the town. Do not be misled by the first signs of quarry operations as you drive away from Monacacy and into the hills, as this may prove to be the huge stock yard where the Dyer Company stores their ballast. Keep on going until you come to a sharp rise over a railroad track, then take the right fork and keep on the lookout for the new sign on the left which indicates the quarry. If you come into Monocacy from Birdsboro, go right on through Monocacy, cross the wooden railroad bridge and leave Route 83 by keeping straight ahead. You will see the stock yards and the piles of crushed stone almost immediately on your right. (There is no quarry here, however).

Many mineral collectors will rave about the striking beauty of this quarry but few will persevere enough to rave about the collecting possibilities of this locality. The rock of the quarry is nearly all solid diabase of the hardest type with few cavities. We have listed the minerals to be found there and will list a few a little later on. There are many seams of prehnite of varying thicknesses, a few narrow veins of calcite and fewer thin veins of laumontite-stilbite to be observed. As we have mentioned before, a great deal of blasting is done at Dyer's; the broken stone is quickly taken to the huge crusher and therefore it is unreasonable to suppose that beautiful specimens are not somewhere in the broken rock. A quarryman tells us that he often sees large cavities in the large pieces of rock being picked up by the shovel. The mere fact that there are large cavities is not in itself very exciting excepting that any cavity in the hard rock at Dyer's is bound to contain excellent prehnite and associated crystals of stilbite and laumontite and very excellently crystalled calcite.

In spite of previous fruitless trips to Dyer's Monocacy quarry in search for good cabinet specimens, though a few good micros are nearly always available, we nevertheless keep checking, at least once a month, because we want to be there when the large veins with cavities are exposed. It is worth repeating that a few years ago a large cavity was exposed containing the most gorgeous prehnite with the most perfect apophyllite crystals we have ever seen from anywhere. Likewise with calcite, some of which is nicely fluorescent.

One Sunday, late in August, with rain threatening any minute, we drove into the new lower level at Dyer's and parked the car in a dry spot. Ginger, the cocker spaniel, who is simply wild about quarries with their puddles and perhaps trails of bygone dinosaurs, however cold those trails might be, could not restrain herself and neither could we, for a very dark thunderhead was hovering ominously. It was just such a time, when one hot summer's day , we found the large mass of prehnite with the almost perfect cubes of apophyllite and pyrite nestled within its cavity. This apophyllite contained an impurity, or a lack of contaminating impurities, which prevented fluorescence. The largest cubes were not over a quarter inch.

We quickly scanned the large rock masses in the corner of the new floor where prehnite and apophyllite were found in small cavities on other occasions and found a vein and an exposed mass of nice greenish prehnite. A hammer and chisel job was started on the half inch vein to determine if there were bigger and better cavities within the rock which must have weighed at least five hundred

pounds. It could not be turned over and the threatening rain was about to spill. With more luck than aplomb, alacrity or despatch, the best part of the vein gave way and exposed a one inch thick by two inch wide lens-shaped cavity of glistening prehnite which was fairly covered with tiny but very excellnet colorless to brownish and transparent lustrous apophyllite crystals. It could be seen with the unaided eye that they were all shapes. There were flat ones resembling wulfenite, flat rectangular and glassy ones, minute dodecahedrons, thin water-clear adamantine and perfect crystals standing on edge and larger and more tightly grouped masses with occasional honey-yellow calcite clusters intermingled with the apophyllite. The vein was explored further. It was completely filled with excellent though small to micro apophyllite.

One part of the vein contained a lustrous mass of golden-brown calcite crystals which were found to be intergrown with the apophyllite. This type calcite is very often worthwhile for mounting, and when associated with the clear and sharply crystalled apophyllite, it makes a very nice micro specimen. Under short and long-wave U.V. the difference in fluorescence and phosphorescence between the calcite and its cousin are noticeable. The apophyllite is much brighter. In some crystals, which at first appear to be colorless (with the unaided eye) and transparent, thin parallel lines of light-brown color can be seen to lie in the same plane internally as the stria lines which show so sharp and clearly defined in geometrically straight and parallel arangement on the faces of the crystals. A great many of this type crystal will fracture very smoothly along these lines, but most of them will fracture very irregularly and show layers of the apophyllite in a manner presented by fractured Wheatley quartz, with possibly the exception that in the apophyllite fracture, the layers may be set back one from the other slightly in steps. Fractured surfaces are as adamantine and as lustrous as the outer surfaces. Some pearliness with fire can be seen on some faces.

Associated micro crystals observed while examining the apophyllite are laumontite, small squares or flat cubes of sphene, datolite, pockets of sharp, clear natrolite, chlorite, calcite, prehnite, and a dark and white metallic pyrite very much like arsenopyrite. No chabazite and only a small group of water-clear colorless stilbite were noted. Natrolite is rare at Dyer's. It is in very fine sharp needles, translucent to transparent and seems to grow out of chlorite masses with which it is intimately associated. Some extremely clear and sharp quartz crystals occur with prehnite.

Though tiny and most of them suitable for micromounts, this apophyllite is by far the best for luster and crystal form than has come to light for some time. Like many Pennsylvania zeolites, too often, the best are in small packages. Old collections of French Creek (St. Peter's, Pa.) and Paterson, N. J., apophyllite are difficult to duplicate, but there is no reason why a collector might not, some day, find more of the gorgeous Dyer's prehnite and apophyllite.

As an alibi for not finding large cabinet specimens on this trip, we refer you to the note on the thunderhead that covered the huge quarry. Whether or not someone sneezed or Ginger's frantic yelping and galloping back and forth across the quarry floor through the rain puddles chasing and seemingly worrying a pair of really self-confident Kildeers, or perhaps the ringing from our chisel and hammer or the dripping perspiration from our chin; something caused that rain cloud to open up its dear heart and effectively stopped our operations on the prehnite vein. We had at least two pounds of thumb-nail size specimens which we knew were loaded with good micro apophyllites. To those friends who are waiting for that promised Dyer's apophyllite, please be patient if it must be cabinet size. Those who have turned (at last?) to microscopy, know what to do. I need but be reminded.

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JAMES GREENFIELD MANCHESTER

SEPT. 20, 1871—JUNE 28, 1948

James Greenfield Manchester was born Sept. 20, 1871, in Fall River, Massachusetts. Working for a living from the earliest recorded period of his life, he perfected himself in whatever he undertook, and the record shows that he was highly thought of in his native city. He learned typing and stenography, and then proceeded to create beautiful designs with typewritten characters, which won the award as best in the United States, in the Columbian Exposition at Chicago in 1893.

Coming to New York City at the request of his very close friend the Rev. Percy Stickney Grant of the Church of the Ascension, he became Treasurer of that Institution. Soon after this, he became Assistant Treasurer of the New York Mutual Life Insurance Company, and still later Assistant Manager of their Real Estate Division.

He was elected a Fellow of the American Association for the Advancement of Science, and declared a Life Member of the Ohio Archaeological and Historical Society.

He was a past President of the New York Mineralogical Club, Inc., succeeding Dr. George F. Kunz of Tiffany & Company. He joined the Club at the March 11, 1908, meeting and used to joke about the hard time he had getting into it. He was a Fellow of the Mineralogical Society of America and a member of the Rocks and Minerals Association.

Mr. Manchester adopted mineralogy as a hobby and became very expert in the appreciation of fine specimens. He made a superb collection of minerals, and presented it, with specially designed cases, to the City of Fall River. This collection is now on exhibition in the Public Library in that city. He also has a collection of minerals at the American Museum of Natural History in New York City.

With Gilman S. Stanton, he published an article called "A Discovery of Gem Garnet (Spessartite) in New York City" *(American Mineralogist, Vol. 2, No. 7, July, 1917, pp. 85-86, 3 figs.)*. He published a number of papers but his major work was the book on "The Minerals of New York City and Its Environs".

Mr. Manchester stated more than once, to the Editor of *Rocks and Minerals*, that his final attempt and long ambition was to write up the geode locality of Ballast Point, Tampa, Florida. These geodes are composed of chalcedony pseudomorph after coral. After considerable delay, due to the difficulty in having the corals accurately identified, the article was finally finished and appeared in the December, 1941, *Rocks and Minerals*. This scholarly article with its many fine photos and nice map became intensely popular and before the issue was a month old, thousands of reprints were made of the article to supply public demand. The cost of printing the article and the many reprints were all taken care of by Mr. Manchester—this was another item in his endeavor to further the collecting of mineral specimens.

After retirement, he established residence in Florida, spending his summers in the little white cottage at Hampton Bays, Long Island, N. Y., which his numerous friends so well remember. During his winters in Florida he investigated and collected more of the pseudomorphs of chalcedony. From these he had many beautiful cabochon stones cut, and a great many photographs in natural colors were made.

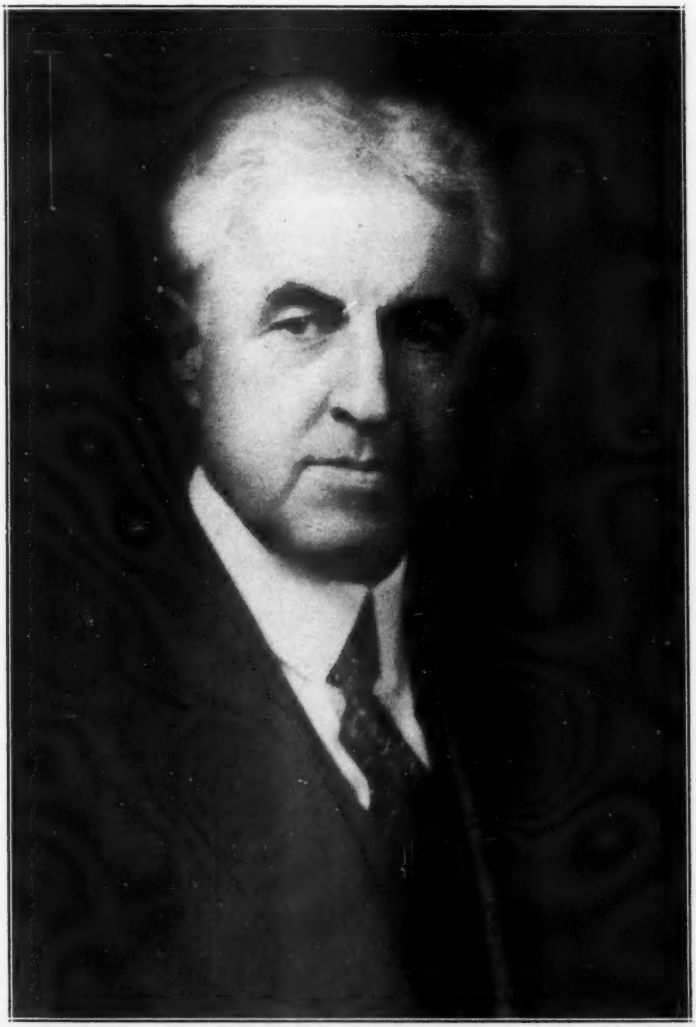
Through his many lectures before Clubs, High School groups, Boy Scout organizations, and fine article in *Rocks and Minerals*, the Ballast Point geodes became widely known throughout the United States. He also spoke publicly on other matters of mineralogical interest, using his numerous natural-color slides of mineral specimens and localities.

He made up a great many collections of minerals, including a number of representative species, which he gave away to young people who showed an active interest. These he dressed up with bright colored specimens purchased from

dealers and furnished them with trays also purchased at his own expense. His donations to the major museums in this country were so extensive that his friends say that there are very few museums in the eastern United States which do not have specimens labelled, "Gift of J. G. Manchester".

Mr. Manchester died in the Southampton Hospital at Southampton, L. I., N. Y. on June 28, 1948, at the age of 76. He is survived by his wife Clara A. Manchester, and a grandson, James G. Manchester, III.

His friendly generosity and gracious hospitality will be long remembered.



JAMES GREENFIELD MANCHESTER

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Dr. A. C. Hawkins

X-RAY MICROSCOPE DEVELOPED

STANFORD UNIVERSITY, CALIF., September 21—A Stanford physicist has developed an x-ray microscope, it was reported today by the university.

The discovery by Dr. Paul H. Kirkpatrick, nationally known expert in the field of x-rays, is expected to provide scientists eventually with a new tool for the examination of minute objects not readily penetrated by light or electrons.

Its resolving power, or range, based on the performance of early models and theoretical studies, is expected to be somewhere between that of the best type of optical microscope and the electron microscope.

While the new device will not have the magnifying power of the electron microscope, its developers believe it will be much simpler in construction and will offer the advantage that living specimens can be examined. Since objects examined under a beam of electrons have to be in a vacuum, this dries up and kills living tissues.

The largest magnification which the scientists have achieved with early models of the x-ray microscope is about 60 diameters, although they have made no attempt to get high magnification in the present stage of their research.

Dr. Kirkpatrick hopes that fully developed models of the device will permit scientists to x-ray objects less than a millionth of an inch in size. This is about 20 times smaller than can be seen with an optical microscope using short wave light.

Development of the first x-ray microscope model climaxed a year's research financed by the Research Corporation of New York. The first scientific report of the discovery will be published tomorrow in an article by Dr. Kirkpatrick and Albert V. Baez, graduate student in physics, in the September issue of the Journal of the Optical Society of America.

An x-ray microscope had long been considered an impossibility because x-rays show almost no refraction, and because of a peculiar quality of the rays which makes it impossible to reflect them off anything except at a very low angle.

This can be compared to the way a stone skips in water. As any boy knows, a stone dropped into water will sink to the bottom. But if it is thrown at a low angle, it will bounce repeatedly off the surface of the water.

Dr. Kirkpatrick bounces the x-rays off one mirror, set up vertically, to another reflector, which is horizontal. One mirror brings the x-rays together on a horizontal plane; the second brings them together on a vertical plane.

The mirrors, about the size of a ten cent piece, look flat, but are actually concave. They are really a tiny segment of a theoretical curve which has a radius of about 30 feet in the current phase of the reasearch, and which may be reduced even smaller.

It was quite a trick to make these tiny mirrors, which are comparable in precision to those of a fine telescope lens. Some of them were ground by Burton Stuart, Stanford physics department technician; others were made by Dr. G. D. Hanna, of the California Academy of Sciences in San Francisco.

To date the scientists have used platinum, iridium, gold, and various metal alloys as coating for the mirrors. An alloy of nickel and platinum gives the best results so far, although a variety of metals and alloys remain to be tested, even though some can be eliminated by mathematical theory.

The metals are deposited on the mirror surfaces by an ingenious device which gives a regulated thickness to the deposit. It is a sort of selective sieve which lets a given amount of metal through to a given area of the mirror.

To date Dr. Kirkpatrick and his associates have concentrated their x-ray microscope beam on a fine gauze screen, which has about 200-300 meshes to the inch. The tiny squares of this screen come up clear and sharp in these first efforts. They have also taken successful microscope x-rays of a wire so fine that it cannot be seen with the naked eye in ordinary light.

At present the scientists are using an ordinary x-ray tube as their source of x-rays, although they are planning to make special tubes which will produce more of the "soft" x-rays—those with a longer wave length—which are needed for successful microscopic x-rays.

The "hard" x-rays—those with a short wave length—are the kind used in ordinary x-ray equipment. They have too great a penetrating power for microscope work and go completely through small objects without creating contrast on the film.

Use of the longer waves, as well as improvement of the mirror surfaces, may permit the critical angle—the bugaboo of x-ray reflection—to be raised from one degree to about three degrees, which will make for greater intensity in the beam.

The wave length which the scientists now find most effective is one and a half angstrom units. (An angstrom unit is about 100 millionths of a centimeter.)

Dr. Kirkpatrick and his staff drew on two well known facts about light phenomena for their research. The fact that x-rays would reflect at a low critical angle was first observed by scientists in the 1920s. It was also well known that the use of two lenses would concentrate diffused rays. But no one thought that x-ray reflections could be focused properly for use in a microscope until Dr. Kirkpatrick thought of using two concave mirrors as reflecting surfaces.

Since air absorbs the desired "soft" x-rays, the x-ray microscope operates under helium, which chases out air but doesn't hurt living specimens.

What will be the uses of the x-ray microscope when it is fully developed?

Dr. Kirkpatrick is reticent about speculation on this subject, but he suggests that it may be useful in the field of metallurgy, in the study of crystals, and in various biological sciences.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933 OF ROCKS and MINERALS published **MONTHLY** at **PEEKSKILL, N. Y.**, for **OCTOBER** 1st, 1945 — State of New York, County of Westchester.

Before me, a Notary Public in and for the state and county aforesaid, personally appeared **PETER ZODAC**, who having been duly sworn according to law, deposes and says that he is the **EDITOR** and **PUBLISHER** of **ROCKS** and **MINERALS** and the the following is, to the best of his knowledge and belief, a true statement of the ownership, management of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the name and address of the publisher, editor, managing editor, and business manager is **PETER ZODAC, PEEKSKILL, N. Y.**
2. That the owner is: **PETER ZODAC, PEEKSKILL, N. Y.**
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: **NONE.**
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given: also that the said two paragraphs contain statements embracing affidavit's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affidavit has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

PETER ZODAC

Sworn to and subscribed before me this 22nd day of September, 1948.

ANNA M. SCHLICH

My commission expires March 31, 1949

IMPRESSIONS OF LIGHTNING RIDGE, AUSTRALIA

By S. J. SQUIRES
61 Hawthorne Rd., Brisbane, Australia

Lightning Ridge, situated 46 miles N. N.W. of Walgett, the latter being 460 miles N.W. of Sydney, has been world famous for many years as the home of the Black Opal—a rare gem of exquisite beauty.

It is said that the first opal found at the "Ridge" was discovered by Charley Nettleton, a sheep man, while sinking a well in 1903.

The discovery soon attracted prospectors from all over Australia, and indeed from overseas, and by 1910 over 1000 miners, or "gougers" as opal diggers are called, were engaged in various parts of the field up to ten miles from the township. Total population at that time was about 2,000.

The name "Lightning Ridge" has an arresting sound, and one visualises a rocky escarpment acting as a gigantic lightning conductor.

Nothing could be further from the truth. The "Ridge" is really an undulatory plateau lightly grassed and timbered, about 30 miles long, and varying in width up to several miles, and less than 100 ft. higher than the surrounding plains. Why "Lightning Ridge"? Was some unfortunate creature killed by lightning there? Inquiries from residents elicited the information that a flock of sheep, variously estimated at up to several hundreds, was wholly struck dead. Others said that it was a team of bullocks that was struck. One informant particularized to the extent that it was all the animals on one side of the team that was struck, all the animals on the other side escaping unharmed.

Filled with the most pleasurable anticipations, after being impatiently marooned by rain in Walgett for two days, I was privileged to sit one day in May, 1948, beside mail contractor Cyril Ingram, in whose truck, loaded with provisions, mails and half-a-dozen passengers I was expertly driven to the Ridge, after several stops to unload supplies and mails at sheep stations along the road. Time taken—about 3 hours over black soil plains still in a bad way from the recent rains.

On arrival at the "Hotel Imperial" about 5 p.m., a one storyed timber and iron bush "pub" where host Mr. Len Covell dispenses spirituous and malt liquors to the thirsty, and Mrs. Covell provides an excellent table for the hungry, and the cleanest and most comfortable beds for the weary, I was received as a guest—the only one during my stay of 2 days. After an early breakfast on my first morning, I set out in quest of anyone who could give me any information about this ghost town.

I soon fell in with "Long Jim" Cowan, resident and gouger of many years, and enjoyed his philosophical, witty, and informative conversation, as, for a couple of hours, we "noodled" the dumps of mullock round the tops of the shafts. "Noodling", I submit for the sake of the uninitiated, is picking over the heaps, in the hope, now and then realised, of picking up some stones that have escaped the eyes of the gouger.

Apart from some pieces of black and amber "potch" or non-precious opal, we found nothing of value, but I felt decidedly richer from being the companion of Long Jim for a couple of hours.

There are thousands of worked out, or partly worked out, abandoned claims of 100 ft. square. The greatest depth of the workings is round about 75 feet.

The "ridge" consists of weathered secondary conglomerate, below which is weathered secondary quartzite. Then a bed of Cretaceous sandstone, immediately under which is the "Opal Dirt", or sandy clay, in beds of from a few inches to about 2 ft. thick, in which opal is found, sometimes in thin seams, but more often as "nodules" (nobbies) like plums in a pudding.

Opal consists of silica and varying proportions of water up to about 10%. The scientific explanation of the variation of patterns and colours that so delight the

eye, from the tiny Pin Fire flashes to the whole surface of the gem presenting the appearance of flame, is that the gem in losing some of its water, shrinkage takes place, resulting in the microscopic fissures which reflect the light with such exquisite beauty.

The population of the field is about 250. There are 47 children on the school roll in the able charge of headmaster Mr. Ted Ring and assistant.

There are only a score or so of able-bodied men now engaged in mining the precious gem, with about 30 or 40 old timers doing a bit of noodling or gouging as the spirit moves them.

Among the younger men that I met are George Boules, Arty Bruce and George Cowan, all gougers and expert cutters and polishers with their own petrol powered plants, and keen judges of values. George Boules was good enough to allow me to descend his claim where I watched him and his mate, Albert, at work.

It was a rare pleasure to meet some of the "old timers", one of the most famous of whom kindly Walter Bradley, 78 years young, was the discoverer, with his mates, Phillipson and Hegarty, of one of the most wondrous opal gems of all time. It felt good to shake Walter's hand, watch his animated face and hear him tell the story of his find in 1918. According to Walter, the stone, a flashing fire red surrounded by a half inch border of blue, with a surface measurement of about 4 square inches, was sold on the field by the partners for £90:0:0. It has changed hands many times since, increasing through the hundreds to thousands of pounds. One felt one's pulses quickening with Walter's, as he told the story of his find, long since world famous as "The Flame Queen".

Other famous gems the field has yelded—

"The Light of the World" discoverd by Kurt Stevens and Billy Klein.

"The Pandora" discovered by Jack Nichol.

These gems and others, sold for tens of pounds on the field, were later sold for hundreds and thousands.

Genial Jack Boules, father of George, told me of a magnificent Red and Black Pin Fire gem of 171 carats that he found in company with his mates, the Allport Brothers. He sold this gem on the field for £150:0:0 many years ago. It too, has changed hands at many times that amount. Jack delighted me with much information concerning the field during his 36 years residence.

Gone are the days of such spectacular increases in values. Dismiss the thought that any such bargains would be got today. All the gougers are expert valuers and if any possible reader be interested in opals from a 'bargain' point of view don't waste your money by going to the Ridge. You may do as well, or better, in your home city.

But if you delight in knowing something of the romance of other peoples lives, of yarning with the old timers and not so oldsters who are engaged in unearthing surely the most gorgeous gem of all time, go, and feel the thrill of standing on the "ridge"—Nature's laboratory, where she has produced a gem in such subtle fashion that has resisted, and probably always will, Man's efforts to imitate it. Go and yarn with Jack Boules, Walter Bradley, Walter Arnold, Long Jim Cowan Jack Williamson, Jack Fessy, Ted Goss and dozens of others whom I did not have the pleasure of meeting and your life will be greatly enriched.

Whilst marooned in Walgett I was privileged to meet friendly business man Mr. Jim Conomos, who very graciously displayed for my delight a collection of gems, before which superlatives were useless to express ones feelings, so one just gazed and feasted in silent rapture.

Many old timers too, living in their modest shacks of corrugated iron, bark, and hessian, have, hidden away, a stone or two that money cannot buy. From time to time, these gems, never diminishing sources of spiritual nourishment, are brought out to delight the eye and soul.

During a residence of several years on a goldfield I developed a great admiration for miners. There is something about their calling that develops to the highest

degree the sterling qualities of comradeship, qualities with which petty meanness of spirit cannot exist.

Perhaps it is, that in their nearness to, they absorb some of the wholesomeness of our Mother Earth.

I look forward to the day when I shall return to renew friendship with the gougers of Lightning Ridge.

I gratefully tender acknowledgement to the N.S.W. Government Mines Department for my geological references to the "Ridge".

I am also deeply indebted to Constable Young of Walgett for much help afforded me in my quest for information about the field and its precious stone, which Shakespeare called "This miracle and Queen of Gems".

WINSLOW GIVES MINERAL COLLECTION TO LIBRARY

For more than 50 years Charles E. Winslow of 31 Wildwood avenue, Greenfield, Mass., has collected minerals, precious and semi-precious stones, cutting some of the gems from his specimens and building a collection of over 400 cut stones. This week Winslow gave to the Greenfield Public library his collection and a large cabinet in which they are displayed.

Winslow, while engaged in setting specimens in their places in the cabinet this week, explained he had not set out to collect minerals as a hobby but had decided years ago to study gems. Realizing that all precious stones are minerals first, Winslow started studying stones and found the subject so fascinating that he soon gathered a collection containing quartz, agate and odd crystals.

His search for rare stones has taken Winslow to many parts of the United States as well as to Labrador several years ago. In Labrador he found on a beach a piece of coral indicating many centuries ago Labrador was a warm country. Scientists through their study of the coral forms found on that cold and ice bound coast have determined many of the geological facts about the world.

Each specimen has been mounted by Winslow on a base of plaster of paris with each base measuring about three inches in diameter and one inch in heighth. A typewritten name and the place the stone was discovered has been pasted to the base.

Winslow has a large piece of pink quartz which he found in Deadwood, S. D., over 20 years ago, and from which he cut his first gem. One of the pioneer gem cutters of this section, he has many stones that are so rare they never appear commercially.

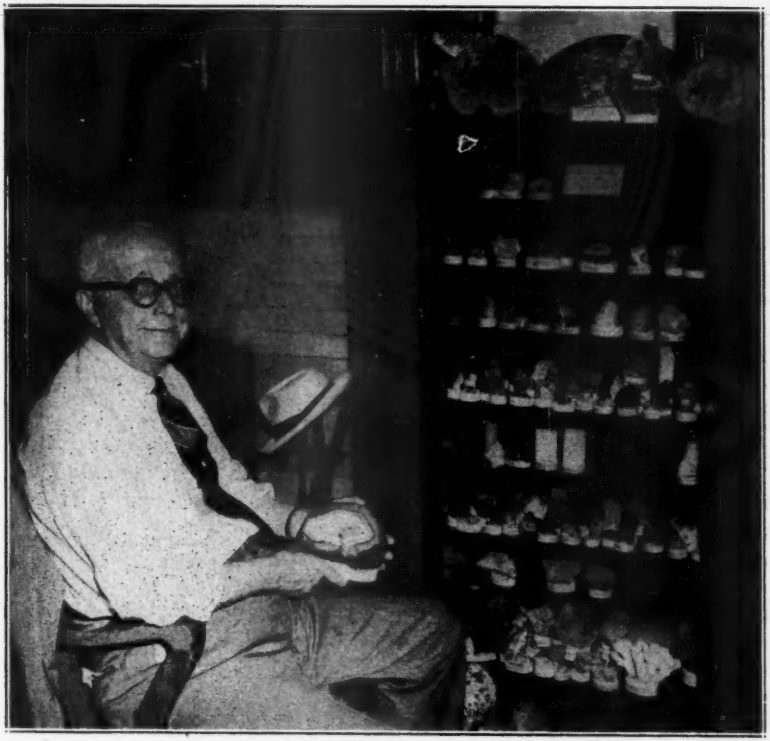
Many persons all over the world have contacted Winslow, who is a member of the Rocks and Mineral Association, and one stone he highly prizes was brought to him from Korea by a missionary. The stone is a smoky quartz from the Diamond Mountains of Korea. About five inches high and larger in shape than a baseball, the stone gives the appearance of diamonds wrapped in black clouds of smoke.

A specimen of prehnite which Winslow found over 20 years ago at the East Deerfield, Mass., quarry, may be cut into lovely gems, but because of the mineral's scarcity the gems never appear outside of collections. Agates with a scene drawn by nature, a lake surrounded by trees and flowers, make beautiful gems, Winslow said, and he has several in his collection, but they are too expensive and rare to be used for jewelry.

A piece of gold quartz, found by Winslow at Northboro, is one of the rarest stones in the collection. About the size of a hen's egg, it contains over $20 worth of gold and because of its smallness and the unusual amount of gold is very valuable.

On a trip to California this summer Winslow visited many states and found new specimens to add to his collection. A seven-inch star formed by salt crystal from Salt Lake City, Utah, is one of the newer pieces.

One of the oddities in the collection is



Charles E. Winslow and part of his mineral collection.

a claystone in the form of a duck which Winslow found on the shore of the Connecticut River in Deerfield.

Several months ago, Winslow said, he contacted the trustees of the library and asked them if they would like the collection. E. Caswell Perry, then librarian but who has now joined the Framingham Library, assured Winslow the collection would be a welcome addition to the library.

For several years Winslow kept the collection at Hollister's jewelry store on Main Street where he is a watchmaker, but two years ago he moved it to his home. He said he has enjoyed explaining the minerals to school children and many teachers have brought classes to see the collection. Winslow has explained many of the stones to the librarians in order they may answer questions.

Winslow said he has decided his gem collection should also be given to the library and is working on a cabinet that will show them to their best advantage. Each gem is mounted on velvet in a tray.

Other hobbies enjoyed by Winslow include collecting oil paintings, old pictures and photography. He has been employed at Hollister's for over 48 years. A member of the Republican lodge of Masons, he is a past master and has held many of the high offices in Masonic organizations.

He also is president of the Greenfield Co-operative bank, and served as a director of that institution for more than 20 years before succeeding the late Atty. Lyman W. Griswold. He was born in Ware and came to Greenfield from Bellows Falls, Vt., 54 years ago.

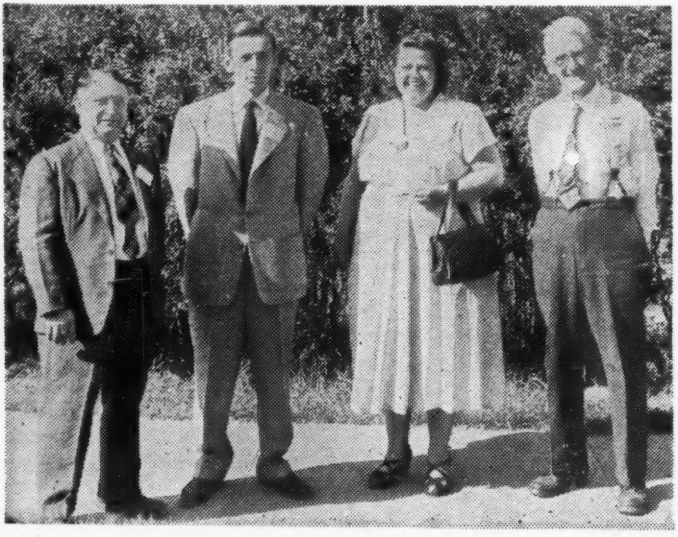
Greenfield Recorder-Gazette, Thurs. Sept. 2, 1948

NORTHWEST FEDERATION CONVENTION

A most successful convention was held at Bozeman, Mont., Sept. 4-5, 1948, by the Northwest Federation of Mineralogical Societies. It drew rockhounds from all over the country. The Host Club was the Montana Society of Natural and Earth Sciences, of Bozeman, Mont.

The real outstanding feature of the show was the post convention trip to the Yellowstone River agate fields near Billings, Mont. There were 29 cars and 67 guests made the trip. The caravan was formed at Billings at 7 a.m., and led by Mr. Burnham, Highway patrolman and member of the Montana Society, who remained with the party all day. The guide for the trip was H. H. Hendrickson, Billings member of the Society, who had made all arrangements. Sandwiches and coffee were served at noon after which drawings were held for several very nice agates furnished by the committee; these agates came from masses which in the rough had been worth over a thousand dollars. The first prize went to W. Copus, of Noblesville, Indiana, and the second prize to J. Frank Murbach, of Seattle, Wash. About one-third of the group camped out for the night (some for two nights) as Billings is about 200 miles east of Bozeman.

A thoughtful gesture on the part of the Committee was a letter of appreciation to Mr. Emery, the owner of the property, who permitted the group to hunt minerals and camp on his 1700 acre farm which is not open to the public for mineral collecting. The letter, bearing the signatures of everyone in the party, took up three pages; it was framed and then sent to



New officers of the Northwest Federation of Mineralogical Societies. Left to right: Paul N. Brannan, Spokane, Wash. (Treasurer); Harry M. Rhorer, Jr., Eugene, Ore. (Vice-President); Mrs. Richard Rice, Hillsboro, Ore. (Secretary); Harvey E. Murdock, Bozeman, Mont. (President).

Greetings:

Mr. Jack Emery

Billings, Montana

We the undersigned Rock Nuts . . . . members of the Northwest Federation of Mineralogical Societies and guests of the Bozeman convention, appreciate the courtesy you have extended to us in permitting us to roam your acres and pick up rocks for our enjoyment . . . . extend to you our hearty greetings and thanks.

Mr. Emery. As this letter is unique, a copy of it is herewith reprinted; in its original form it is 6 x 12 inches in size.

The clubs which make up the Federation are non-profit organizations and must depend on the help of commercial firms and mineral dealers for financial support to bear the necessary expenses of putting on the show. These firms and dealers, of course, in turn depend on selling materials and minerals to club members. They supported the convention in a fine and commendable manner and they all seemed to be quite satisfied with the results of the show; in fact some were sold out the first day.

The 1949 convenition goes to Eugene, Oregon. The time normally would be the two days preceding Labor Day but a petition presented by the commercial firms and dealers will have to be acted upon before deciding definitely. They wish to advance the date a week or two and to increase the time to three days.

The banquet, held on Sept. 4th, presented a most appetizing menu. Why the food was simply mouth-watering. Suppose we present the menu in full!

MENU

For Old Prospectors

Salt Water Gold

Ground Water

Pudding Stone Salad

Plymouth Rock (Fried)

Stalactites and Stalagmites

Botryoidal Relish

Marble Ice Cream

with

Rock Candy Sauce

Mud or Milky Quartz

THE MICRO MOUNTER

Conducted by Leo N. Yedlin, 557 W. Penn St., Long Beach, N. Y.

We recently visited the establishment of Harry Ross in New York City to discuss the availability of equipment for the m/m collector. The place is not pretentious, but is, nevertheless, a mineralogist's paradise. Mr. Ross had dozens of used 'scopes on hand, from inexpensive single barreled affairs to fine binocular stereo instruments, perfect for our purposes. In the course of our browsing we discovered a number of useful things, among them a universal stage for m/ms, somewhat different from any we had described before (see cut), a substage lamp at about $3.00 which is fine for lighting box mounts, a high intensity light with transformer, made to order, focussing from a pinpoint of light to a wide beam, excellent for m/m work and which can be used for micro-photography as well as for examining fluorescent m/ms, since the light contains a high percentage of long wave ultra violet. There were, too, hundreds of lenses of every description, from a few cents to a dollar, in addition to tongs, forceps, glass slides, etc., etc., all so necessary to the full enjoyment by the microscopist.

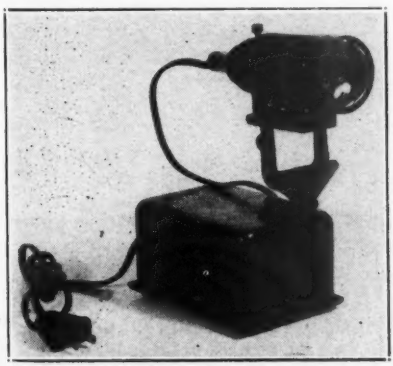
And if you are interested in polarized light, either for the microscope or as a quick method of determining quartz spheres from common glass, a couple of 3" glass covered polaroid discs can be had for a song.

Mr. Ross bemoaned the fact that a good used binocular microscope, once

Universal stage for handling standard 1x1 box mounts.

available for $50 to $75, cannot be purchased today for less than $200. "However", he stated, "there is no reason for anyone to forego the pleasures of microscopic work in mineralogy. While there is no question that a stereo-binocular 'scope is best, so much can be obained from a monocular instrument that it is a pity for one to deprive himself of the satisfaction of using a good working instrument. A great portion of the cost is in delicately geared mechanisms, stages, and supporting apparatus, when the important factors are the lenses. We have devised a simple instrument, mostly of elementary laboratory equipment, bearing in mind that the prime factor is magnification and that the supporting mechanism is secondary."

The apparatus is simple. To the upright rod of a metal laboratory stand is fastened a burette clamp, normally used for holding test tubes. This is the entire apparatus for holding the lenses and barrel—cost $1.50. A microscope tube, ($3.-00) threaded to receive ocular ($5.00) and objective ($10) complete the instrument. Total cost under $20.00, and you have a fine accurate instrument, which, by interchanging oculars and objectives can give a wide range of magnification. Adjustments can be made as to angle, height, focus, etc., by the mere turning of a thumbscrew. For additional equipment, a substage lamp as noted above, another clamp, and a universal stage completes the job. A swell "mike", that can be broken down and practically carried in the pocket. (See cut for complete assembly.)



High intensity utility lamp shown for use with microscope.

Mr. Ross is interested in your problems. An ardent microscopist himself, he is constantly devising new methods and tricks for the enjoyment of enthusiasts.

Charles A. Thomas of Royersford, Pa., submits a unique method for mounting specimens. He cements a small piece of sheet iron (a bit of a tin can will do) to the bottom of his boxed mount. A magnet is used as a stage, and the specimen is firmly anchored when placed thereon, at whatever angle desired. Any number of variations can be worked out. Mr. Thomas is generous to a fault. He sent along many specimens from the Phoenixville, Pa., lead mine, including pyromorphite, wulfenite and anglesite, and a series of zeolites and their associates from Perkiomenville, Pa. Included was a tiny "mushroom" calcite, a twinned rhomb capping a hexagonal stem of aragonite. We searched (in vain) for a micro-toad sitting atop the specimen, blinking his eyes.

A note from Mrs. Charles A. Belz, Lansdale, Pa. She's just returned from Clay Center, Ohio, with celestite and fluorite in m/m size, and with some definite ideas regarding displays. Her letter, in part, follows:

"Did you ever pull open a drawer of micro-specimens and see only neatly (?) labeled boxes, row after row, with nary an inkling of the little beauties hidden under those prosaic lids?

"Personally, I don't like looking at a drawer full of labeled boxes, so I place the lid underneath and have plastic lids to fit. Thus the contents are in full view.

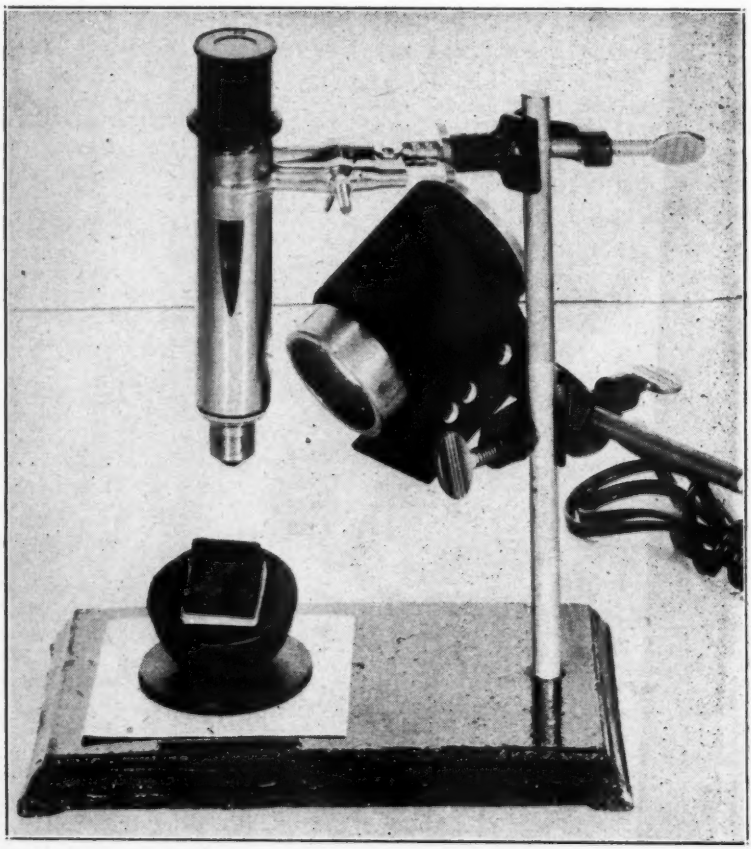
"I have a cabinet of 18 shallow drawers each drawer holding about 98 boxes. When I pull one open all 98 specimens are in full view at once, even though their full beauty cannot be appreciated without the microscope. However, one seldom, if ever, has an opportunity to show an entire collection of micros at one time, but in this way the mounted specimens, even without the 'scope, are very attractive indeed. I had used up all of the plastic

lids sometime ago, so lately I have been using a sheet of plexiglass or ordinary window glass cut to fit the drawer. This keeps the specimens safe from dust or injury."

Many inquiries have reached us regarding possible sources of m/m material. May we suggest two old expressions that may help out "Gold is where you find it". and "Go to the ant, thou sluggard." In other words, good specimens may be anywhere, but you sure have to dig for them.

First, go to your own cabinet specimens. If you are a discriminating collector the great portion of your material is crystallized, and usually has small vugs just lined with tiny crystals. The removal of some of these from the back will not injure the specimen at all and is a prime source of good material. The next step requires a little deviousness. Some fast talking will induce your best friend to furnish his cabinet specimens for pruning. Some life-long friendships have been known to survive such a severe strain. But it's worth a try.

Second, look around you. The entire philosophy of m/m collecting is bent toward the obscure specimen. Any quarry



Complete assembly of a monocular microscope.

or mine, no matter how long abandoned, will offer fine material. Break large stuff down. Look for seams, vugs and porous material. Note contacts, cavities, and areas that seem to have sparkle. These may be reflections from minute crystal faces.

Third, make judicious purchases. All dealers have some material suitable for m/m collectors. A few specialize in such. Goudey, Byron, Burminco and others have advertised in *Rocks and Minerals*, and quite often others will specify, of a particular mineral, "Suitable for the m/m collector". Sometimes the description of a particular specimen will indicate that good material is in the offing. And certain localities just breed fine stuff. But bear in mind that the selection of specimens for the m/m enthusiast is a delicate and exacting task. It cannot be expected that a dealer will go to his stock, spend hours in making good selections, and then receive a few cents for his time, effort and material. Good minerals come high, and that's why we recommend:

Fourth, exchanges. What a number of our friends do is visit a dealer, purchase half a dozen large specimens, break them down, keep a couple and then exchange with others who do the same thing. In this way a dealer is able to perform his proper function, the collector "mines" his own specimens, and loads of exchanges are effected. We believe that if enough m/m enthusiasts were interested, the Editor of this publication might arrange an exchange directory, say at a small yearly rate, which would list the names and addresses, and the type of material offered and wanted.

You know of the rare copper and lead minerals from Laurium, Greece, which have formed in the ancient lead slags. You know, too, of more recent mineralization, even in your own cabinet where unstable pyrite alters to white powdered melanterite. A new one is a fine micro specimen of hemimorphite, sent along by C. A. Noren of Fresno, Calif. The mineral had been collected last summer from the tunnel walls of a lead mine at Clayton, Idaho, abandoned for 60 years. The crystals are sharp, clear, and tabular in habit.

A recent visit to the old Strickland quarry at Portland, Conn., proves the statement that no locality is played out to a m/m collector. The place hasn't operated in years, and it has been stated that nothing worthwhile is ever found. Maybe so, but Lou Perloff and the micromounter spent about 3 hours there, and came up with excellent specimens of pyrite, in cubes, octahedrons and the rare diploid, fluorite cube and tetrahexahedron combinations, almandite in brilliant clear gem trapezohedrons, apatite, green and brown tourmalines, quartz, albite, columbite, cookeite, bertrandite, hematite, microlite and possibly zircon. Platy albite abounds. It is in the interstices of the plates that most good crystals are found.

One thing the microscope shows up is a mineral fraud. Normally these are easily spotted, but sometimes a rare bit of workmanship gets by until suspicion is aroused and careful examination is made.

We obtained just the other day a small specimen of silver in cerussite, from Wardner, Idaho. The "mike" showed a peculiar thing. The cerussite surrounding the silver was botryoidal instead of crystalline. We probed with a needle (Who are these Swiss watchmakers, anyhow?) and found that the blebs were cement, and that each bit of silver had been implanted in the cerussite, very expertly, for it did not show except under high power. Under U. V. light the glue fluoresced. We happened to know that the dealer had obtained the specimen as part of a large collection. The silver is good, and well crystallized. So is the cerussite. We bought it because of the association of minerals. The manufacturer of the fraud must have surmised that someone would. We suggest, then, that when buying minerals, where a thing is very unusual, unique, out of place, illogical, etc., you doubt its authenticity, at least to the extent of most careful examination and U. V. test.

John Parnau of Stockton, Calif., must be mentioned again. We had done some exchanging with him in the past and had

received superb specimens of zeunerite, libethinite, chalcophyllite, strengite, olivenite, clinoclasite, etc., from Nevada. Much work went into the preparation of mounts from this material, until it was our considered opinion that we had the best. Absolutely tops. Nothing finer, anywhere. We rested on our laurels.

Well, that's all over. It doesn't pay to be smug and to sit back gloating. A package arrived just recently. We've opened it and surveyed the contents,—super superb zeunerite, libethinite, chalcophyllite .,. . .etc.! And how we are deflated and must needs start all over again. Ah, well—we hope it will be a long winter. . . . .

QUESTIONS and ANSWERS

Ques. "Can you recommend a simple guide book to help my son classify his minerals? He is only 11 years old and the books I have seen in New York shops are too complicated for him."——C. G. O., Great Kills, N. Y.

Ans. There is no simple guide book for a youngster of 11 but one or more of the following should be of some help. Hawkins *The Book Of Minerals;* English *Getting Acquainted With Minerals;* Dana *Minerals And How To Study Them.*

Ques. "I have heard that fine specimens of natrolite are to be found in the region of Red Hill, Penn. I tried several times to locate the mineral there but have thus far failed. Can you give me the location of the mineral in that area?"——W. C. J. Lebanon, Penn.

Ans. The locality you want is the Kibblehouse trap rock quarry at Perkiomenville, about 3 miles south of Red Hill, Make inquiry in the little village as the quarry is not visible from the road. A nice article on the quarry (with map) by William F. Haeberle appeared in the April, 1941, issue of *Rocks and Minerals.*

Ques. "Are any minerals of interest to be found in the hard coal mines of Pennsylvania? I am going to spend a week in that region visiting friends and if I could collect a few minerals it would please me a lot."——A. A. C., Buffalo, N. Y.

Ans. Pyrite and rock crystals are especially common in the hard coal regions and good specimens may often be found.

Ques. "I have a nice loose celestite crystal with a label pasted on it which reads, "Celestite, Strontian I.L.E." This is an old specimen. Can you give me some idea as to its locality?"——J. J. K., Trenton, N. J.

Ans. Your specimen comes from the famous locality on Strontian Island in Lake Erie, north of Sandusky, Ohio.

Ques. "I am a beginner at mineral collecting. In looking over a dealer's price list I note that mineral trays are listed. What are they and for what purpose are they used?"——M. R. D., Houston, Texas.

Ans. A mineral tray is a container, especially of cardboard, into which a mineral and its label are placed. Its purpose is two-fold. First it keeps a mineral and its label together and second, if the mineral is a friable or delicate one the tray protects it. If minerals are placed loose in a cabinet, each on its own label, some minerals are apt to roll and rub against softer ones which might damage them. In lifting a loose specimen, its label may be left behind and later it might be forgotten just where the specimen belongs. And furthermore, too much handling of a delicate specimen might ruin it. When a specimen is placed in a tray (the tray

should be just large enough for the specimen to fit snugly) and the tray is lifted out, the label always accompanies its specimen; a tray holding a delicate specimen may be handled time and time again with no injury to the mineral. The use of trays also tend to a neat and orderly arrangement in a cabinet. See Collector's Column, last issue, page 829, for a further discussion about trays.

Ques. "What does xl and xled mean.. I have seen them used frequently in the ads of dealers."——D. B. S., Hot Springs, Ark.

Ans. These are abbreviations for crystal and crystallized. Xline is an abbreviation for crystalline.

WHY I LIKE TO BUY FROM DEALERS

Although I have been interested in minerals for several years it was not until two years ago that I subscribed for *Rocks and Minerals*. Immediately an entirely new world was revealed to me. Tiger-eye from Africa, opals from Australia, carnelian from South America, jade from Siberia were accessible. Many varieties of agates, cabinet specimens of various minerals, fossils, petrified wood, meteorites, books, complete lapidary equipment could be purchased.

Now was the opportune time to obtain some of these treasures. Were these dealers reliable *Rocks and Minerals* said so. I sent for several minerals. All came as described.

Then I became interested in quartz, listing over three hundred kinds. Parcel post has brought several slab bargains worth many times the price paid; including moss, flame, pictureagate, chalcedony, nodule slices. I plan to make a slab collection and one of rough quartz of as many kinds as possible. This will engage my attention for years.

Much of this material will have to come from dealers. Dealers endure hardships and encounter dangers, lose equipment on trail. They spend countless hours breaking, sawing, sorting, listing, sending orders to customers. Their reward? Satisfied customers.

As I have to pinch pennies, I study the ads thoroughly before buying. From one dealer came a wonderful slab bargain, from George Curtis, beautiful moss and picture agate, from the Arizona Agate Mines, lovely chunks of agate; from the Geminlap Mart, lapidary tools; from Oregon Discoveries, delicate sagenitic agate. I could continue but for lack of space. Therefore I like dealers, because they say what they mean, and do more than they say.

Mrs. Ruth H. Wentworth
135 Maine Ave.,
Portland, Maine

Sept. 3, 1948

I am a 12-year-old boy and live in Abilene, TEXAS. I started collecting minerals when I was 4 years old. I have 215 minerals in my collection of which 106 have been purchased from dealers. I like to buy from dealers because they usually have different kinds of minerals at different prices. It gives me a thrill to find a nice mineral shop when we are on our summer trips. When you buy from dealers you can make new friends. Some dealers are even generous enough to give you a mineral or two with each purchase. I buy minerals from dealers every month or two. Some of the minerals I purchased from dealers are from such localities as the Death Valley area, California, Jade from Wyoming, Cryolite from Greenland, and Quartz Crystal from Arkansas. I like nothing better than to receive a package of minerals from a dealer. I live in a locality where good minerals cannot be found so dealers are a real help to me.

Howard Kunz
1135 Highland
Abilene, Texas

Aug. 22, 1948

REDISCOVERY OF A VARISCITE DEPOSIT

In the fall of 1929, a mining engineer when about a mile out of Wickenburg, Arizona, picked up an old prospector with a forty pound sack of grub on his back. The prospector's name was Dan Malone. About five miles further on the road, Malone pointed to his road-side cabin to which the engineer drove and stopped to discharge him and his sack of grub. Malone invited the engineer to get out and look over his mineral collection. It was quite a collection of various rocks and minerals, all of which Malone had found in the mining regions of the Southwest and in Arizona during the past ten years. One small pile of specimens especially, caught the eye of the engineer because he could not classify it, never before having seen anything quite like it. Malone did not know what it was, either, and he told the engineer that in his forty-five years of prospecting, from the Rocky Mountains to the Pacific and from Canada to Mexico, the deposit from which these samples came was the first he had ever found.

Malone gave the engineer some samples of the mineral and after minutely describing its location, he made a map for him which proved to be so concise and accurate that many years after the engineer had little difficulty in finding the deposit. About a month later, having sent specimens to the Bureau of Mines at Washington, D. C., the engineer received a brief report from the Bureau stating that the mineral was variscite, of which there were then only four known deposits in all the world. Classed as a semi-gem, its main use and demand, due to its scarcity, was as specimens for mineral collectors. The engineer was not interested, however, but from habit he filed the report along with the specimens and the Malone map.

Some seventeen years later,—in 1945, the engineer chanced to meet a gentleman interested in semi-gem stones and in the ensuing conversation the memory of the engineer flashed back over the years to the Malone variscite. From this chance meeting a partnership was formed and the engineer planned to find the deposit. His first thought was to find Dan Malone and get him to guide them to the property, and if it was found and acquired, to give Malone a profit sharing interest. Accordingly he drove to the road-side cabin of Dan Malone only to learn that for the past five years it had been occupied by another prospector. In Wickenburg the engineer was able to find the store where Dan Malone had traded and from its owner learned that about eight years prior to that time Dan Malone, sick and ailing, had left that part of the country to enter an Old Soldiers Home, the whereabouts being unknown, and that he had never been heard from since.

In the village of Aguila, Arizona, the engineer found a prospector who had recently done some prospecting in the mountain in which the Malone variscite was located and engaged him for the trip. With no more trouble than is usually encountered on a desert road and mountain trail, they reached the Malone variscite deposit. This deposit is about 200 miles from rail transportation. The nearest village is about 45 miles distant. The engineer was able to drive to within five miles of the deposit at which point they left the car and hiked the five miles over a dim, tortuous trail.

Variscite from the four other known deposits in the world, all of which are almost, if not entirely depleted, has been predominantly the dull, dark-green variety but ALAMO VARISCITE is almost entirely the rare and beautiful apple-green variety. Several connoisseurs declare that polished specimens of ALAMO VARISCITE are more strikingly beautiful than turquoise. The name, ALAMO VARISCITE, is after the Alamo Mountain in which the deposit is located. This bleak, rugged mountain is a part of the Southwestern Coast Range, the southerly extension of the California Coast Range closely adjacent to the Pacific Coast.

Other semi-gem minerals, of which there is a considerable variety, are more or less widely distributed throughout the

world's mineralized regions, some such deposits having been worked for hundreds of years and some of which are still producing. But, variscite is not only rare in occurrence but it belongs to the superficial type of mineral deposits. It appears to have been formed by colloidal replacement, and as a thin capping of a chert vein, which strongly indicates that variscite was the last manifestation of metasomatic deposition. In depth, variscite seldom continues more than ten feet below the surface, however, the original deposition may have had greater vertical depth. Variscite is not known to have been found, except in areas of deep erosion. But while variscite deposits are of shallow depth, as a rule they often mushroom on the surface up to the width of ten feet or more and may be up to thirty feet in length. As the variscite fails, plays out, the chert comes in. In some, or at least one instance, the chert, which is practically barren of variscite, was followed to a depth of a hundred feet. Chert the variscite matrix, if such it may be called, is usually vari-colored and when brecciated the polished specimens are rather pretty.

The W. G. Reese Mining Company, 2475 Dysart Road, Cleveland, Ohio, has contracted for the output of ALAMO VARISCITE.

ATOMIC ENERGY COMMISSION DESCRIBES ITS PRESENT INTEREST IN THORIUM

Washington, D. C., October 14, 1948 —Prompted by an increasing number of inquiries currently being received from individuals and small companies interested in monazite, the principal ore from which the element thorium is obtained, the Atomic Energy Commission today outlined for public information the nature and extent of its present interest in thorium.

While a strict control of exports and a complete record of domestic movements of thorium-bearing materials, including monazite ore, is maintained by the Commission, pursuant to the Atomic Energy Act of 1945, the usefulness of thorium and its principal source in nature, monazite ore, so far as the Commission's program is concerned, is limited for the present time to research. Accordingly, the only thorium the Commission purchases is for experimental purposes, chiefly in the form of thorium salts, and the Commission has no purchase program for monazite ore as such.

Thorium has long been recognized as a potential source of fissionable material. Consequently, like uranium, it was placed under the control of the Atomic Energy Commission by the Atomic Energy Act of 1946. Solving the many complex research problems in the way of the large scale utilization of thorium may take a decade or two. The possibility, however, cannot be excluded that the time may be shorter. When the research problems are solved, thorium may become of great significance in the atomic energy program. Until these problems have been solved, however, thorium will not be in large demand for use in nuclear reactors.

Inquiries to the Commission regarding monazite ore have increased since April 1948, when the Commission publicly classified uranium 233 as a fissionable material pursuant to the Atomic Energy Act of 1946, since it is technically possible to derive uranium 233 from thorium in a manner similar to the way in which plutonium is derived from uranium.. Current demand for monazite ore arises principally from its established uses outside of atomic energy since it is the only commercial source of the element cerium and other rare earth materials which are essential to many industries.

CLUB AND SOCIETY NOTES

ATTENTION SECRETARIES—If you want your reports to appear in the March-April issue, they must reach us by Jan. 10th—the Editor.

North Country Mineralogical Club

Mr. George Tribble, manager of the Lippa & Co. jewelry store in Plattsburgh was the principal speaker at the August meeting of the North Country Mineralogical Club. Mr. Tribble for years has made a hobby of gems, particularly diamonds. He discussed the formation of gem materials in nature, giving much information about the structure of diamonds, and the methods for "mining" them. He explained the steps in preparing gems for use in jewelry, and told stories about some of the world-famous stones. To accompany his talk, Mr. Tribble had on display unmounted and mounted diamonds, rubies, sapphires, aquamarines, black opals, moonstones, jade, and emeralds. Among the samples was a diamond "in the rough", well illustrating his statement that these stones have little beauty before they have been cut and polished.

Following Mr. Tribble's address, Mrs. Alma Young spoke on the sardonyx, the birthstone for August. In addition to describing these semi-precious gems, Mrs. Young told of the superstitions connected with them, and exhibited an old cameo cut from a sardonyx.

Following the meeting, a collection of minerals from Northern New Jersey was displayed by Mrs. Sarah Sherlock of Bloomfield, N. J. Mrs. Sherlock, who had also visited our club last summer, brought some fine specimens for exchange with our members. Mr. Richard Sylvester, of Syracuse, N. Y., exhibited part of his collection of fluorescent minerals, displaying the effects of two different types of portable lamps on the color range of these stones.

On August 15th, a field trip was held. We went first to Ausable Forks, N. Y., where a picnic lunch was eaten at the home of Mr. and Mrs. Fred Carnes. Later, Mr. Carnes conducted the group through his shops, demonstrating machinery for cutting and polishing large stones, and distributing samples of several types of granites. Mr. Carnes also showed and explained his equipment for preparing semi-precious gems for use in jewelry, exhibiting examples of cabachons which he had prepared.

During the afternoon, Mr. Carnes conducted the party to a spot on Spruce Hill, between Keene and Elizabethtown, where clay nodules, known as "pudding stones" have been found. Unfortunately, road-building operations had altered the site, and covered up the location of these interesting formations. Mr. Carnes shared with us his collection gathered at the site at an earlier date.

Gertrude E. Cone
Secretary,
Keeseville, N. Y.

Mineral & Gem Society of Castro Valley

At the regular monthly meeting of the Mineral and Gem Society of Castro Valley, held Friday, August 13, 1948, the members voted one hundred percent to change the name from Eden Mineral and Gem Society to Mineral and Gem Society of Castro Valley.

Eleven new members joined the Society at this meeting. Mrs. G. W. Luce showed colored slides and exhibited fluorescent materials. Mrs. Luce also donated specimens of Lavic Jasper to everyone present.

Mr. and Mrs. F. W. Buhn had a fine display from their collection of polished specimens to show members.

Mrs. B. A. Breeden,
Publicity Chairman
8123 Berdina Road
Hayward, California

Cleveland Lapidary Society

The Cleveland Lapidary Society held a very interesting and instructive meeting on Sept. 7th, 1948, at the Geology and Mineralogy Building, Case Institute of Technology, Cleveland, Ohio. Every seat in the room was filled and extra chairs had to be brought in to accommodate the crowd.

President Turobinski gave a short talk on Sapphire the birthstone for September.

Mr. Elmer A. Koenig gave a splendid talk on "Carving Jade". Certainly no one should become discouraged when performing complicated tasks of cutting and polishing gem material after listening to Mr. Koenig discuss the various tools and gadgets he used and many hours spent in performing his work. The many articles he has carved out of Jade and the painstaking efforts he has put into them are clearly apparent. His masterpiece is a small loving cup, handles and all carved from a single piece of Jade.

The Society authorized the Secretary to issue honorary membership cards to Dr. H. C. Dake, Editor of *The Mineralogist,* Lelande Quick, Editor of *The Lapidary Journal,* and Peter Zodac, Editor of *Rocks and Minerals,* with the best wishes of the Society.

The next meeting was announced for October 5th, 1948, 7:30 p.m. (same place as previous meeting) at which time Mr. Howard J. Reid will talk on "Design of Jewelry" and Mr. Richard Frazer will give a 10 minute talk on Opals, the birthstone for October.

John M. Heffelfinger, Sec'y
7619 Redell Ave.
Cleveland 3, Ohio

Mineralogical Society of Southern Nevada, Inc.

(Report for Month of August, 1948)

The practical uses of gypsum were stressed by Prescott Kay of the Mineral Materials Company at Henderson, Nevada, at the August lecture meeting of the Mineralogical Society of Southern Nevada, Inc.

Emphasizing the fact that gypsum is not a fertilizer, he explained the part that this agricultural mineral plays in soil conservation. When used singly or in combination with fertilizers it assists in preventing soil erosion, retaining moisture and making the soil more friable, thereby stimulating growth.

It is easily and rapidly applied to soil by means of the conventional spreader. The application of water then carries the gypsum into the ground where it increases the porosity of the soil. Since gypsum has two molecules of water of crystallization, it acts like a sponge in retaining the moisture in the soil. Kay related that the gypsum produced at the Henderson plant, is 98% pure and for this reason is used solely for agricultural purposes.

The August field trip of the Society was to the Bureau of Mines, Boulder City, Nevada. Mr. C. T. Baroch and H. A. Heller of the Bureau of Mines greeted the members and acquainted them with the purposes of the bureau as a whole and objects of the pilot plants set up here. After registering and viewing the mineral display in the reception room at the bureau the group gathered in the Library to hear an address by Mr. Baroch.

He explained the work done by the bureau of electrolytic manganese and chromium, as well as the new process for low-grade western zinc ores. Titanium is another metal in which the bureau is interested. This element, while discovered in 1791, has only recently received much attention. Considerable development work on this metal has been done here along the line of powder metallurgy. This process takes the fine metal dust, compresses it at approximately 50 tons per square inch, and after sintering a machinable bar of metal is produced. With the increased demand for high temperature metals and alloys, the future of titanium appears to be assured.

During the past decade the bureau has investigated the possibilities of developing natural resources and has handled much experimental work pertaining to the national defense program. One problem assigned to the bureau in the early war years, was that of finding a substitute for nickel in the five-cent piece. There were such factors as weight and resistivity to be considered in the selection of a metal for this purpose, because of the large number of coin operated mechanisms in use. Finally it was found that a mixture of nine parts of manganese, 35 parts of silver and 56 parts copper would serve the purpose. All five-cent pieces bearing the large mint marks are of the new alloy.

Of particular interest was the operation of the Geiger Counter. Mr. Heller also demonstrated and lectured on spectrographic analysis. Mr. Baroch stated, "We are a public servant working in the public interest. Our work in no way to be considered as competing with consulting engineers or assayers as the bureau does no work of this type for individuals."

(Report for Month of September, 1948)

Mr. Harry Fuller was the guest speaker, Tuesday evening, September 21st, at the lecture sponsored by the Mineralogical Society of Southern Nevada, Inc.

Mr. Fuller stated that before he started his lecture he would like to put in a plug for the organization and the work being done. He gave a brief history of the organization and said it was now a society really devoted to the purpose of studying mineralogy and the earth sciences

An outline of geological time was presented with Mr. Fuller emphasizing the fact that each period had its own life which could not exist under different conditions, such as the Trilobite found in the Cambrian Period and the Dinosaurs found in the Mesozoic Era. Rocks of the Pre-Cambrian and Cambrian may be seen in the Grand Canyon close to the river while the red formations of Bryce and Zion National Parks and the Valley of Fire are of the Triassic Age and the limestone of Mt. Charleston is of late Paleozoic Age.

The Appalachian Mts. were formed between the Paleozoic and Mesozoic Eras while the Rockies were formed between the Cretaceous and Eocene Periods. Minerals are usually found in igneous rocks and therefore in big earth movements which accounts for mines being in mountainous regions.

Topographic maps were then discussed and their uses explained. Mr. Fuller told how these maps are made and stated that the Hayden Survey of 1879 is still considered standard. At this point it was explained how a geologist would map an unknown area.

The Society wishes to announce the following prize winners on their Mineralight drawing September 7th. The R-51 went to Mrs. Dorize Peterson, Whitney, Nevada. Mrs. Peterson is a leader of one of the Junior Groups sponsored by the Society. The M-12's went to the Photo Mart, Las Vegas, Mrs. A. B. Collins and Mrs. P. Wilson of Boulder City, while the Model "H" went to Mr. J. Hudlow also of Boulder City.

We would like to take this opportunity of thanking those California Federation Societies who assisted in making this fund raising campaign a success. The Society is now fairly well equipped to realize plans for the Junior Groups as well as the Society as a whole

D. McMillan
Publicity Chairman
Boulder City, Nev.

Cincinnati Mineral Society

The regular monthly meeting was held at 8:00 p.m., Wed. Aug. 25, 1948, at the Cincinnati Museum of Natural History. Once again we had a full turnout in torrid weather.

The meeting was opened by our President, Mr. Edgar Sarles, who introduced Miss Hildebrandt as a guest of Miss Spellmire and Miss Edith Fox.

The membership committee reported that Mr. G. B. Hubing, Mr. Buford Payne, and Mr. Thomas Weibel were eligible for membership. Acting upon this recommendation these men were accepted and welcomed into our group as full members.

Our secretary, now the new Mrs. James Fox, expressed thanks to the Society for the wedding gift presented to her.

Mr. C. L. Gschwind, Chairman of the Field Trip Committee, announced the completing of arrangements for field trip Sun. Aug. 29, 1948. Plans were to visit the Gratz and Lockport mines in Kentucky, and a visit to an exposure of massive crystalline aragonite near this area. A group of about 25 were going, including our good friends, the Grossmans of Batesville, Ind.

Mr. Gschwind reported briefly on two weeks of collecting in central and southern Pennsylvania. Prized find was the occurrence of some excellent piedmontite near Gettysburg, Pa.

Mr. Warren Wells, acting on behalf of the Program Committee, introduced our Mr. Joseph Tressell as speaker for the evening. Mr. Tressell spoke on the subject nearest his heart, namely, "Silver, its mining, refining and uses." Mr. Tressell held the interset of the group to the very end with his fascinating first-hand lore on silversmithing. He presented examples of the silversmith's art and the materials used. Notable among these was a 17th Century Italian piece which came into his hands through unusual circumstances. Through exhaustive research on the hall marks he was able to determine the origin and maker of the piece. Mr. Tressell was complimented highly on his excellent presentation and with a question period the meeting was closed with every one very "silver" conscious.

The regular monthly meeting was held at 8:00 p.m. Wed. Sept. 29, 1948, at the Cincinnati Museum of Natural History.

A discussion of the field trip of Aug. 29th was held for the benefit of those who did not attend; specimens of material collected were available for those members.

The K. T. Donie mine at Gratz, Ky., was visited and the dump and a new drag line pit afforded good specimens of massive barite, galena, and sphalerite; minor minerals were pyrite, fluorite, and calcite. Across the Kentucky River from the above location, the Cox mine, now abandoned, was visited. The dumps of this mine produced dogtooth calcite coated with strontianite, barite, massive and platy crystals, sphalerite and galena. The strontianite is red fluorescent.

At the abandoned Lockport mine, further up the river at Lockport, Ky., much of the same material was found. All of these mines are located on a fault zone, the minerals occurring in the fault by deposition from solution.

On the property of Mr. Otto Smithers, on Kentucky Route 355, up river from Gratz, we found the prize for the day. Up on the hillside there is an exposure of a vein of aragonite. This aragonite was very massive in extent and almost all crystal forms were exhibited. This aragonite proved to be light blue fluorescent.

Our good friends, the Grossmans, came all the way from Batesville, Ind., to attend tonight's meeting and as always they are very welcome. They vacationed in Oklahoma and have many specimens from that area.

Other minor business of the meeting being completed, a grab bag was presented to the members, each person getting two big grabs—courtesy of Mr. Gschwind. Everyone seemed pleased with his or her choice and due to the variety of minerals there was little duplication. Specimens of piedmontite collected near Gettysburg, Pa., were also presented to the members by Mr. Gschwind.

Everyone came prepared with apron and choice pebbles or slab material for cutting and polishing to which the balance of the evening was devoted.

The Cincinnati Mineral Society wishes to extend an invitation to all persons interested in rocks and minerals to pay us a visit. Our meetings are always held at 8:00 p.m. on the last Wednesday of every month, at the Cincinnati Museum of Natural History, Parkway and Walnut Street, Cincinnati, Ohio.

Charles L. Gschwind,
Corresponding Secretary
6931 Diana Drive,
Cincinnati 24, Ohio

Texas Mineral Society

The Texas Mineral Society of Dallas met for its regular second Tuesday of the month meeting at the Baker Hotel in Dallas, September 14th.

Mr. Raymond C. McIver, one of our foremost members, had just completed a 6,500 mile trip to Oregon, Washington, Wyoming, Colorado, etc. and told of the rock-hounds that he had met and talked to. Mr. McIver had taken several rolls of colored film of points of interest on his trip and showed them to the Society.

Ralph D. Churchill, Sec.-Treas.
2003 Republic Bank Bldg.
Dallas, Texas

The Georgia Mineral Society Field Trip — August 14, 1948

The Amethyst locality near Buckhead, Morgan County, Georgia, was visited by approximately 40 members and friends of the Society. Good specimen material was plentiful, but matrix specimens were rare. No work has been done here for several years and only a small pit was put down by hand labor when first discovered, therefore there remains the possibility of better material at a future date.

Our Greensboro, Ga., member, Mr. E. H. Armour, was on hand with several friends and, at just the right moment produced a tubful of variety of soft drinks to suit the taste of most everyone present and as the day was very hot, the drinks were much appreciated by all.

After collecting at this locality the party proceeded to Rock Eagle Park (about 5 miles north of Eatonton, Ga.) to view the Prehistoric mound of quartz stones piled up in the shape of an Eagle. The beak points directly east at the summer and winter solstice. The wing spread is 120 feet and the depth of the body at the breast is 8 feet. At present only two such eagles are known east of the Mississippi River and both are in Putnam County, Ga.

Our next stop was for a picnic lunch on the shore of beautiful Rock Eagle Lake. The cool shade of the surrounding trees made this an enjoyable affair. After the picnic all were free to enjoy the swimming, boating or just plain loafing and, it was truly a Rock-hounds Holiday as the trip was announced to be.

September Meeting and Field Trip

On Monday evening Sept. 6, 1948, the Society held a combination meeting and field trip at Stone Mountain, Ga.

The meeting was short and the members signified their approval of two resolutions of the executive committee. The first was one to establish a sinking fund for the purpose of acquiring a building at some future date for meetings, and to house exhibits and equipment of the Society. The second resolution was one to perpetuate and enlarge the Chase S. Osborne Fund to enable the Society to award prizes from time to time to outstanding junior members.

The field trip began immediately after the meeting and right on the spot as Hyalite Opal was plentiful in this quarry. The Portable Mineralight was a great success causing the Hyalite to fluoresce brilliantly, and members and visitors collected specimens until they could carry no more. After prospecting this quarry, another in the vicinity was visited, but Hyalite was not as plentiful as in the first.

The meeting and field trip ended the 1947-48 year for the Society and Dr. Furcron, the retiring president, will be missed by all. He has been a veritable spark plug, bringing the Society out of its doldrums of the war years, a host of accomplishments too numerous to mention here are to his credit.

On Monday evening October 4, 1948, the annual Dinner Meeting will be held, and new officers for the forthcoming year will be installed.

Annual Dinner and Meeting

On Monday evening October 4. 1948, the annual dinner and meeting was held at the banquet hall of the Georgia Institute of Technology. Dr. Lane Mitchell is to be complimented on the fine dinner that he arranged for the members and guests.

After the dinner the regular meeting was held and our retiring president Dr. A. S. Furcron gave a report of his stewardship for the past year. Among the many accomplishments of his term of office are the following: Establishment of the Gemology Section headed by Mr. E. E. Joachim; Publishing of the News Letter each month with Dr. Furcron as the editor; the establishment of a sinking fund toward the acquisition of a permanent meeting place or building, and other things too numerous to mention here.

Dr. Furcron announced that Mr. Charles Webb had been selected the most outstanding Junior member of the year and that the Chase S. Osborne prize in the form of fine mineral specimens would be presented to him later; also a field trip to the Rome, Ga., area for Saturday, October 16, 1948, to collect fossils and minerals was announced.

The address of the retiring president over, Capt. Garland Peyton took the chair as the new president for the year 1948-1949 and gave a short talk after which the meeting adjourned. New Officers for the coming year are: Capt. Garland Peyton, Pres.; Mr. Gusso, Vice Pres.; Mr. S. P. Cronheim, Treasurer; Mr. Charles Wilkins, Secretary; Dr. Frank Daniel, Historian; S. C. Knox, Corresponding Secretary.

Field Trip—Oct. 16, 1948

The society held an unusual and very successful Field Trip on Saturday, October 16, 1948. The members and friends, ably led by Dan Arden Jr. of the Department of Geology of Emory University, collected fossils and agate at several localities in Northwest Georgia. Among fossils collected were various brachiopods, coral, crinoids and many others.

About 35 people were present on this trip, including a group from the newly formed Murphy Earth Science Club of Atlanta (a high school group) and another group of students from Shorter college of Rome, Georgia. These two groups were very enthusiastic collectors and we hope to have them with us on our future trips.

S. C. Knox
Corresponding Secretary
2142 Memorial Dr. SE
Atlanta, Ga.

Mineralogical Society of So. California

Mr. A. G. Ostergard, newly elected president of the Mineralogical Society of Southern California, was the speaker at the September meeting of the Society. He spoke on "Mineral Collecting in Old Mexico". His lecture was illustrated with beautiful Kodachrome slides which he took while on his recent trip augmented with slides from the collections of Mr. W. Stewart, E. Calvert and J. Rodekohr.

Mr. Ostergard's lecture was a fascinating story of a most interesting and profitable mineral collecting trip through Arizona, New Mexico and Old Mexico. He, with Mr. George Burnham, of "Burminco", started out in March of this year on a three months journey. They traveled in a small truck, the body of which had been covered and bunks and a table installed.

The first stop was at Quartzite, Arizona, where quartz crystals were collected. Many had interesting inclusions. One crystal was found containing as inclusions 3 small pyrite cubes.

The next major stop was at the Yuma Mine near Tucson, Ariz. This mine opened originally as a gold mine, was mined in World War 1 for vanadium. Here luck or just good prospecting uncovered two nice vugs which yielded many fine specimens of vanadinite attractively arranged over well crystallized calcite.

The trip continued then on into Mexico with the first stop at Milpillas. Here the splendid hospitality of the Mexican people provided burros and horses and the adventurers packed back about five miles to an old mine which had recently been worked for scheelite. Two days of collecting produced some good tourmaline, nicely terminated citrine quartz crystals, and some specimens of scheelite.

The travelers then headed for Cananea and from there to Nacozari which was supposed to be some 80 kilometers (50 miles) away. Seventy-five miles of driving over roads bad even for Mexico found our travelers still short of their destination. Nacozari when finally reached, though a town filled with unbelievable squallor and poverty, rewarded the collectors with some fine specimens of cuproscheelite and the rare stibiobismuthinite.

Next, after a disappointing trip out from Banamichi in search of wulfenite crystals which did not materialize, the collectors crossed the border at Naco, Ariz., back into the states. The Old Bridal Chamber Mine at Lake Valley, New Mexico, produced some splendid manganite specimens.

With a number of other stops throughout New Mexico, they continued on to the Big Bend Country in Texas to collect much beautiful agate. Then on to El Paso and back into Mexico again.

At Cerro los Muertos (Hill of the Dead) were found the rare grossularite garnets. These white garnets occur along the granite-limestone contact zone—chiefly on the hanging wall side. An abundance of vesuvianite is to be found on the footwall next to the limestone.

At Mapimi, Durango, Mexico, in the Ojuela Mine some wonderful collecting was done. Hemimorphite crystals, adamite, aragonite, wulfenite, mimetite—as George Burnham exclaims in his diary of the trip—"What a mine! One can't imagine without seeing it, how large it is and how many crystals occur in it. The walls glisten with crystals of various kinds and sizes almost anywhere the lamp is turned in the stopes, raises and drifts."

In Durango also at Iron Mountain, where Mexican miners are almost litterly moving an entire mountain by hand, were found the famous apatite crystals of the region. And then finally the trip headed homeward.

The success of this collecting expedition was attested to by the beautiful display of minerals which Mr. Ostergard arranged for the meeting. Mr. Ostergard's interesting narration of the trip and the beautiful slides he showed had every collector in the audience longing to be off for Mexico.

Pauline A. Saylor
Covina, Calif.

Hollywood Lapidary Society

At the June meeting of the Hollywood Lapidary Society the following officers were elected: Thomas Virgin, president; W. A. Stephenson, vice-president; Russell E. Kephart, treasurer; Stuart Peck, Raymond Reese and Arthur Tanner, directors. The following appointments were made, Dorothy Van Nostrand, recording secretary, Mary Lovett, corresponding secretary, and Jean Robinson, editor.

We held our first annual Lapidary and Gem Exhibit at Plummer Park, 7377 Santa Monica Blvd. Hollywood, Calif., October 16th and 17th, 1948, under the direction of Walt Shirey.

Mary Lovett
Corresponding Secretary
1315 Seward St.,
Los Angeles 28, Calif.

Central Iowa Mineral & Fossil Club

The new officers of the Central Iowa Mineral & Fossil Club were elected in September They are:

L. E. Crosman, Pres.; H. R. Straight, Vice-Pres.; Mrs. R. G. Hays, Secretary; L. M. Peterson, Treasures.

A Junior Club has been formed with John Sanders as the leader.

The October program was given by Mr. and Mrs. R. G. Hays who illustrated their "Colorado Collecting" talk with Kodachrome slides.

Mrs. R. G. Hays
Rt. 1, Buffalo Rd.
Des Moines, Iowa

Queens Mineral Society

Summer and Fall Activities

The Queens Mineral Society held its first meeting combined with a field trip to Bedford, New York, in July. After regular club business had been disposed of, Mr. Robert Shephard, a member of the Society who is intimately familiar with the locality, spoke on the Bedford Pegmatite Dike. Mr. Shephard reviewed the forces that produced the great number of minerals that have been found there. The geological aspects of the region were discussed at great length, and clarified by well prepared large size charts. The members then made a tour of the workings, under the guidance of Mr. Shephard, who pointed out the various mineralized zones and the geological features that had been discussed in the preceeding meeting and discussion.

The members then proceeded to do some collecting and some nice Columbite crystals, Bismuthinite (massive), Beryl crystals, massive Rose Quartz etc., found their way into the mineral bags of the members.

The second field trip undertaken by the entire Society was to Ellenville, N. Y., to collect Rock crystals, massive Galena, milky Quartz crystals, loose double terminated Quartz crystals and massive Arsenopyrite.

The vacation season being on hand, no further group society activity was planned until September 26th, at which time a visit is to be made to Sparta, New Jersey. However, some of our members collected in Canada, California, the New England States, North and South Carolina, Virginia, Pennsylvania, New York and New Jersey.

Our September meeting, held in our meeting room, was primarily devoted to an exhibit of the mnerals collected in the field by our members. The many fine and rare specimens exhibited made it a difficult task for the prize committee to select the winners. First prize was awarded to Mr. and Mrs. E. Marcin who exhibited Gahnite, Triphylite crystals, Feldspar and Quartz crystal groups, bladed Hubnerite, Pyrolusite and Manganite crystals, Chalcopyrite crystals, massive Purpurite, Eospherite Datolite crystals, Babingtonite crystals, Wolframite crystals, Columbite crystal, Scapolite crystals, Grossularite garnets and to climax all the above, an outstandingly fine large crystal group of Cassiterite.

Mr. Segeler displayed Vesuvianite crystals, Brazilianite (from Palermo) Whitlockite crystals, Graftonite, perfect large Triphylite crystals, Babingtonite crystals, Pyrite crystals, an unusual large Calcite crystal which had several smoky quartz crystals cemented to its base by Mountain Leather. Barite crystals, Chrysocolla and Chalcodite. this exhibit was awarded second prize.

Mr. T. Fredericks captured third prize with his exhibit of, Pyroxene crystals, altering to Hornblende, excellent Tourmaline crystals, brown Apatite crystals in matrix and loose, Staurolite crystals, Feldspar crystals and Franklin Calcite, that showed twinning planes. All these were topped off by his large Danburite crystals.

Other members that participated in the exhibits were the Messers W. Helbig, A. Koerber Mr. McKown and M. V. Pribil.

The second exhibit of specimens by members of the society was the featured event in our October meeting. The exhibit was mainly confined to specimens acquired by the members by purchase or "swap" during the past 12 months. The display created much discussion on the part of the members who had the opportunity to view the minerals displayed.

Mr. E. Maynard displayed a tray of exceptionally fine cabochons cut from chalcedony after coral.

Mr. and Mrs. Ed. Marcin exhibited specimens of the following: Christobolite with Fayalite crystals, Chalcocite crystals Zunyite crystals, Bayldonite, Malachite after Azurite, Micro crystals of Gibbsite, Cinnabar, Cuprite crystals and Uvarovite on Chromite.

Mr. M. McKown displayed sandstone concretions and many specimens of petrified wood.

Mr. Perratore displayed fine Sphalerite crystals, Moss Agate, doubly terminated Smoky Quartz crystals, several varieties of petrified wood, Azurite crystals on Malachite, Fluorite, and Amethyst crystals.

William Stadler, Sec.
153-08 119th Ave.
Jamaica, L. I., N. Y.

Central Iowa Mineral & Fossil Club

The month of Sept. has been a busy one for the Southwest Mineralogists Inc. now that field trip weather is here again. Sunday Sept. 26th, a party of 24 visited Tick Canyon and the old Pacific Coast Borax mine for Howlite. Many fine specimens of Howlite, Aragonite, Ulexite, and Colemanite along with some Agate were found. Every one had a wonderful time enjoying the Minerals found as well as the weather.

At our regular meeting on Sept. 20th, Mr. Jim Underwood spoke on Montana Minerals of the Butte area giving facts and figures on the richest little hill in the world. Mr. Underwood also had an interesting display of Copper Minerals.

Mr. Akers spoke a few minutes on a specimen of Tungsten ore from the largest mine in the Andes of Peru.

Our Vice President, Mr. Frank Trombatore, displayed a Coral tree on a Lava formation and told how it was snagged in 1200 feet of water while on a fishing trip in Baja, Calif.

Connie Trombatore
Corresponding Sec'y
338 Pomelo Ave.
Monterey Park, Calif.

Pomona Valley Mineral Club

The September meeting of the Pomona Valley Mineral Club was held in the Chemistry Building of Pomona College. The speakers for the evening were Mr. and Mrs. A. E. Allard of Huntington Park. Their subject was "The History of Minerals, Mineral Oddities, and Fluorescents". Mr. Allard showed some excellent slides, while Mrs. Allard gave the lecture.

The slides were extremely well done, particularly of the fluorescent minerals. The Allards used two projectors, using them alternately, which gave the effect of motion pictures. This was especially effective with the fluorescents. The mineral was first shown in its natural state, then as a fluorescent. The colors seemed to gradually change on the specimen, until they were shown in all their beauty.

Mrs. Allard's lecture was most interesting. She began by giving the history of minerals, stating that gold was the first known mineral. It is mentioned in the second chapter of Genesis. Copper was the second known mineral, being used in 4000 B.C. Malachite was used as childrens' amulets around 4000 B.C. She said there were 131 mines and quarries held by the Indians when the white men came to California.

A group of slides were of mineral oddities. These consisted of nodules which had all sorts of pictures in them.

The club owes many thanks to Mr. and Mrs. Allard for a most informative evening. We enjoyed their slides and lecture very much, and hope they will return soon.

The Pomona Valley Mineral Club had a display at the Los Angeles County Fair, September 17 to October3. A number of the members brought some of their prize specimens to this meeting and a very attractive case in the Grandstand resulted. The exhibit consisted of specimens, faceted stones, cabachons, and books relative to mineralogy.

Verna N. Weist
3 22A East B St.
Ontario, Calif.

At the October meeting of the Pomona Valley Mineral Club, members enjoyed a fascinating talk and display of smithing tools and materials which was presented by Miss Genevra Dow of Claremont.

Miss Dow exhibited many beautiful finished pieces of jewelry and also a fine assortment of novelty items constructed of silver, gold, copper, aluminum, and plastic. In her talk she discussed the value of good design, skills required to carry out metal craft work,and various processes that have been developed in order to carry out beautiful metal craft construction.

The November meeting of the club will consist of the traditional fall banquet.

Alice S. Cohoon, Sec'y
246 W. Aliso St.
Pomona, Calif.

Pacific Mineral Society

Mr. W. Scott Lewis, member of The American Association for the Advancement of Science, Mineralogical Society of America, Southern California Academy of Sciences, and other organizations, described Kodachrome slides of minerals that were projected on the screen by Mrs. Lewis at the Pacific Mineral Society's October meeting. Mr. Lewis, in his program of "Hidden Beauties of the Mineral World", states that minerals have some of the characteristics of living things. Crystals are born as minute groups of atoms. They grow by drawing material from a solution or even from a magma. Here we learn of the different ways in which minerals can originate.

The first minerals to be projected on the screen were some of the copper ores which included malachite pseudomorph after azurite, chalcopyrite on dolomite, cuprite, tennantite, tyrolite (rare, named from Tyrol), natrochalcite, and dioptase. Copper is one of the very early minerals and was used extensively because of being so malleable. Native copper is considered a secondary mineral. Another rare specimen which was shown was one of native iron from Disko Island, Greenland. As the program continued, we enjoyed seeing lovely specimens of iron ores, manganese ores, zinc, lead (including a nice specimen of crocoite from Tasmania), scheelite, and numerous others including a prize specimen of cassiterite from Tasmania which had originally been from a collection of the Museum at Sydney, Australia. Mr. Lewis stated that it was impossible to fix nitrogen in the soil unless some molybdenum was already in the soil. Last on his program of slides were some uranium specimens and he stated they were the signature of the atoms. One slide of atomic bomb glass showed a frothy green mass of glass which was originally the natural sands of the desert and the intense heat of the exploding of an atomic bomb boiled it into froth. In Mr. Lewis's description of his program, he states that some of the ores can compete with flowers, insects, and birds when it comes to bright colors, especially the beautiful greens and blues of copper, the brilliant red of mercury, red and yellow forms of arsenic, and wonderful crystals of lead compounds.

Educational displays for the month of October were pegmatite minerals from Toll Mountain, Butte, Montana. These were from the collection of President, James F. Underwood. A collection of "First Edition" mineral books were shown by Mrs. A. E. Allard.

Field trip for the month of October was to the Trona mineral show where members enjoyed a trip out to the Lake and according to field trip chairman, John A. Jones, they all obtained nice specimens of basal hanksite crystals.

Mrs. A. E. Allard, Pub. Chmn.
3133 Live Oak St.
Huntington Park, Calif.

COLLECTOR'S COLUMN

Conducted by A. CAL LECTOR

In the last issue this column made its first appearance and the main point brought out was that each beginner should acquire a small collection of well labeled specimens, study them, and read up on them. A list of minerals, 50 to be exact, and 18 rocks were featured. This month we will begin the study of the minerals and comment on them. The first mineral selected, albite, belongs to one of the most common groups of minerals on earth the feldspars. The term "feldspar" comes from the German and means "field spar", in allusion to its being found loose on the surface of the ground in many parts of Germany. (Feld means field and spar means a readily cleavable crystalline mineral having a vitreous luster). Feldspars are silicates, because they all contain silica. The chief use for feldspar is in the manufacture of pottery but some varieties are gem quality and may be used for gems, ornaments, etc. Feldspars are especially common in granites and pegmatites and come in many forms and colors.

ALBITE

Albite is one type of feldspar. It is made up of sodium, aluminum and silica and because of its sodium content it is sometimes known as sodium spar or sodium feldspar. The name "albite" comes from the Latin *Albus*, meaning white, due to the fact that the most common color of albite is white. Its other colors are gray, greenish, green, reddish, and bluish. Albite is a very hard mineral, so hard that it cannot be scratched with a knife, but there are many other minerals which are even harder—quartz, topaz, corundum, and diamond for example. In the Mohs scale of hardness, albite stands 6-6.5 (diamond, the hardest substance known, stands at 10).

Albite is a very common mineral and is especially prolific in the feldspar mines and quarries of New England, New York, Virginia, etc. Good crystallized specimens have been found at Branchville, Conn., and at Amelia Court House, Va., while the platy, lamellar type, known as cleavelandite (named for an early American mineralogist, Dr. P. Cleaveland, 1780-1858) have been found at Strickland quarry, Conn., and at the old abandoned quarry at Chesterfield, Mass.

Perhaps the best crystallized specimens of albite come from the Swiss and Austrian Alps, in Europe, and collectors should strive to obtain one or more of them. The snow-white opaque variety, pericline from St. Gothard, Switzerland, is a really good collector's item. Pericline comes from the Greed word, *incline*, because the crystals are elongated in one direction.

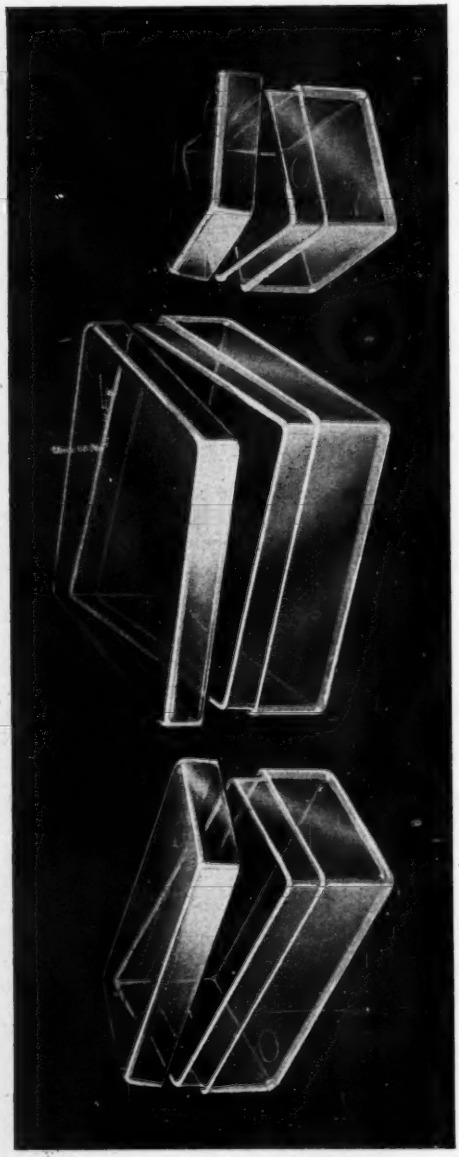
Another variety of albite is peristerite, a word which comes from the Greek, referring to pigeon because the mineral has an iridescence similar to the colors seen in the neck of a pigeon. Some very nice specimens of peristerite have been found in the Baylis quarry at Bedford, N. Y. Fine specimens of the mineral have been cut and polished for gems, paper weights, etc.

A characteristic of albite is that on cleavage faces it shows a myriad of fine parallel striations which help to identify the mineral from some of the other feldspars as microcline or orthoclase.

As albite is very common and occurs in nice specimens, all collectors should strive to have two or more types in their collections. If the mineral does not occur in your area or if you are not familiar with it, order two or three types from your dealer. Specimens can be obtained from 25 cents up to $5.00; for $2.00 one can get a real nice specimen.

News Item

C. E. Bales, Vice President of the Ironton Fire Brick Company, Ironton, Ohio, spoke on "Ceramics and Gem Stones" at the meeting of the West Virginia Section of American Ceramic Society in Huntington, West Virginia, on October 22.



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ROCKS AND MINERALS

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A Magazine for Mineralogists, Geologists and Collectors

NOVEMBER - DECEMBER, 1948

Vol. 23, Nos. 11-12 ● Whole No. 207

60c

27th LIST OF FINE MINERALS

PYRRHOTITE, Kisbánya. Fine mass of platy xls. in parallel position. 3x2x2. Entirely unaltered, very good ..... $ 7.50
CUPRITE v. CHALCOTRICHITE, Bisbee. Xld. w. Azurite. 2½x1½ 2.00
THOMSONITE, Paterson. Fine radiating xld. mass. 2½x2 ..... 3.00
FLUORITE, Weardale. Group of bluish-lilac xls. 3x2½ 2.00
CASSITERITE v. "WOOD TIN", Cornwall. Botryoidal w. some Quartz. 2x2 2.50
SCOLECITE, Iceland. Finely xld. on rock. 3x3x2 ..... 3.50
TELLURIUM, N. Mexico. Rich xlline. mass w. Quartz, etc. 2x1¼ 3.00
DIABOLEITE, Tiger, Ariz. Good xlline. mass w. Caledonite. 2x2x1¼ 5.00
BROCHANTITE, Bisbee. Xld. on matrix. 2½x2½ 2.00
PYRITE, Park City, Utah. Group of brilliant xls., very showy. 3x2 ..... 3.00
MICROLITE, Taos Co., N. M. Minute xlline. masses in Lepidolite. 3x2 .. 1.25
BOURNONITE, Andreasberg. Large xls. in ore. 2½x2 ..... 6.00
LIROCONITE, Cornwall. Xls. in rock. 1¼x1¼ 3.00
ROSASITE, Nevada. Minutely xld. w. Hemimorphite. 2x1½ 2.50
EPIDOTE, Alaska. Group of small (up to ½") twinned xls. 2½x1¾ 3.00
CINNABAR, Terlingua. In rock w. Calcite etc. 4x1½x1½ 2.00
BENITOITE, California. Good xls. w. Neptunite on rock. 3x2½ 10.00
PENNINITE v. KAMMERERITE, Texas, Pa. Fine lilac xlline. mass. 4x2½x2 2.50
DESCLOIZITE, Uitsab, S. W. Africa. Group of mammoth xls. 3x2½x2½ 7.50
MILOSCHITE, Rudniak, Yugoslavia. Chromiferous Kaolin. 3x2½x2 ..... 2.00
FLUORITE, Wölsendorf. Group of dark purple, almost black, xls. 4x2½ .. 3.00
HIGGINSITE, Bisbee. Xld. on Chrysocolla. 2x2 ..... 1.50
FRANKLINITE, Franklin. Excellent large rounded xls. in ore. 3x2 ..... 5.00
FERBERITE, Colorado. Minutely xld. on rock. 2½x2 ..... 2.00
HYALITE, Bohemia. Thick globular glassy masses on rock. 2x2 ..... 1.50
SYLVANITE, Cripple Creek. Xlline. masses w. Fluorite on rock. 4x2 .... 6.00
CASSITERITE, New Mexico. Micro. translucent red xls. on rock. 2x1½ .. 1.50
HEULANDITE, Fassathal. Good brick-red xls. in rock. 3½x3 ..... 3.50
PLANCHEITE, S. W. Africa. Blue mass w. traces of Dioptase. 3x2x2 ..... 3.50
TOURMALINE, Newry, Me. 2x1" unterminated prism, green and red, in Quartz 3x2. (Not cuttable) The so-called "watermelon" Tourmaline. 2.50
MERCURY, California. Globules w. some Cinnabar in Calcite. 2x2. Fl.... 1.25
COBALTITE, Sweden. Excellent loose xl. about 5/16" 1.25
CALCITE, Kansas. Good large lilac and yellow xl. 6x4x2. Scalenohedron.. 3.50
CASSITERITE, N.S. Wales. Group of complex black xls. 1½x1¼ 3.00
ACTINOLITE, N. Carolina. Green xls. in silvery Talc, quite good. 3x2 .... 1.25
FAYALITE, Rockport, Mass. Massive in Quartz. 2½x2 ..... 1.50
PHENAKITE, Mt. Antero, Colo. Small xls. on Smoky Quartz xl. 1½" 2.00
GOLD in Quartz, Colorado. 1¼x¾". A small but rich specimen 2.00
DEWEYLITE, Tweedsville, Pa. Minutely botryoidal & massive. 3x1½ 1.25
GALENA, Scotland. Brilliant highly modified xls. on Sphalerite. 3x2 ..... 2.00
COLUSITE, Butte, Mont. Massive w. Quartz. 2½x1¼ 1.25
MANGANITE, Harz. In brilliant terminated xls. up to ½". 3x3 ..... 15.00
TETRAHEDRITE, Bolivia. Xld. and massive on Quartz. 4x2½ 2.50
FRIEDELITE, Franklin, N. J. Pure solid reddish-brown mass. 4x2x1½ 5.00
LIVINGSTONITE, Mexico. Xlline. mass. 3x2½ 4.00
VESUVIANITE, Morelos, Mexico. Bright yellow loose xl. 1¼x1 ..... 2.00
SPODUMENE, Pala. Colorless complete xl. 1¾x1¾. Not cuttable. Fine... 5.00
RUTILE, York Co., Pa. Larged twinned xl. 1½x1½ 1.50

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No lists furnished, but enquiries for specific minerals welcomed.